

# FCC Test Report

## (Part 27 – LTE Band 4, 13, 14)

**Report No.:** RF141118C01-7

**FCC ID:** AZ489FT7062

**Test Model:** LEX L10

**Received Date:** Dec. 16, 2014

**Test Date:** Dec. 23, 2014 ~ Mar. 26, 2015

**Issued Date:** Mar. 27, 2015

**Applicant:** Motorola Solutions Inc

**Address:** 1301 East Algonquin Road, Schaumburg, Illinois 60196

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

**Test Location:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.



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### Release Control Record

| Issue No.     | Description      | Date Issued   |
|---------------|------------------|---------------|
| RF141118C01-7 | Original release | Mar. 27, 2015 |

## 1 Certificate of Conformity

**Product:** Smart phone

**Brand:** Motorola Solutions Inc

**Test Model:** LEX L10

**Sample Status:** Prototype

**Applicant:** Motorola Solutions Inc

**Test Date:** Dec. 23, 2014 ~ Mar. 26, 2015

**Standards:** FCC Part 27, Subpart C,M

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Celine Chou , **Date:** Mar. 27, 2015  
Celine Chou / Specialist

**Approved by :** Ken Lin , **Date:** Mar. 27, 2015  
Bruce Chen / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 27 & Part 2 |                                                                    |        |                                                                                   |
|----------------------------------------|--------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                                                          | Result | Remarks                                                                           |
| 2.1046<br>27.50(b)(10)                 | Equivalent Isotropically radiated power (for LTE Band 13)          | PASS   | Meet the requirement of limit.                                                    |
| 2.1046<br>27.50(d)(4)                  | Equivalent Isotropically radiated power (for LTE Band 4)           | PASS   | Meet the requirement of limit.                                                    |
| 2.1055<br>27.54                        | Frequency Stability<br>Stay with the authorized bands of operation | PASS   | Meet the requirement of limit.                                                    |
| 2.1049<br>27.53(m)(6)                  | Emission Bandwidth                                                 | PASS   | Meet the requirement of limit.                                                    |
| 2.1051<br>27.53(m)(4)(6)               | Band Edge Measurements                                             | PASS   | Meet the requirement of limit.                                                    |
| ---                                    | Peak To Average Ratio                                              | PASS   | Meet the requirement of limit.                                                    |
| 2.1051<br>27.53(m)(4)(6)               | Conducted Spurious Emissions                                       | PASS   | Meet the requirement of limit.                                                    |
| 2.1053<br>27.53(m)(4)(6)               | Radiated Spurious Emissions                                        | PASS   | Meet the requirement of limit.<br>Minimum passing margin is -30.19dB at 43.58MHz. |

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                        | Frequency        | Expended Uncertainty (k=2) (±) |
|------------------------------------|------------------|--------------------------------|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz   | 2.44 dB                        |
| Radiated Emissions up to 1 GHz     | 30MHz ~ 200MHz   | 3.59 dB                        |
|                                    | 200MHz ~ 1000MHz | 3.60 dB                        |
| Radiated Emissions above 1 GHz     | 1GHz ~ 18GHz     | 2.29 dB                        |
|                                    | 18GHz ~ 40GHz    | 2.29 dB                        |

## 2.2 Test Site and Instruments

| Description & Manufacturer              | Model No.                    | Serial No.  | Date Of Calibration | Due Date Of Calibration |
|-----------------------------------------|------------------------------|-------------|---------------------|-------------------------|
| Test Receiver<br>ROHDE & SCHWARZ        | ESCI                         | 100424      | Oct. 06, 2014       | Oct. 05, 2015           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ    | FSU 43                       | 100115      | Dec. 18, 2014       | Dec. 17, 2015           |
| BILOG Antenna<br>SCHWARZBECK            | VULB9168                     | 9168-155    | Feb. 26, 2014       | Feb. 25, 2015           |
|                                         |                              |             | Feb. 26, 2015       | Feb. 25, 2016           |
| HORN Antenna<br>SCHWARZBECK             | BBHA 9120D                   | 9120D-404   | Jan. 05, 2014       | Jan. 04, 2015           |
|                                         |                              |             | Jan. 05, 2015       | Jan. 04, 2016           |
| HORN Antenna<br>SCHWARZBECK             | BBHA 9170                    | BBHA9170241 | Feb. 17, 2014       | Feb. 16, 2015           |
|                                         |                              |             | Feb. 17, 2015       | Feb. 16, 2016           |
| Preamplifier<br>Agilent                 | 8449B                        | 3008A01961  | Oct. 18, 2014       | Oct. 17, 2015           |
| Preamplifier<br>Agilent                 | 8447D                        | 2944A10738  | Oct. 18, 2014       | Oct. 17, 2015           |
| RF signal cable<br>HUBER+SUHNNER        | SUCOFLEX 104                 | 309220/4    | Aug. 09, 2014       | Aug. 08, 2015           |
| RF signal cable<br>HUBER+SUHNNER        | SUCOFLEX 104                 | 250724/4    | Aug. 09, 2014       | Aug. 08, 2015           |
| RF signal cable<br>HUBER+SUHNNER        | SUCOFLEX 104                 | 295012/4    | Aug. 09, 2014       | Aug. 08, 2015           |
| Software<br>BV ADT                      | ADT_Radiated_<br>V7.6.15.9.4 | NA          | NA                  | NA                      |
| Antenna Tower<br>inn-co GmbH            | MA 4000                      | 010303      | NA                  | NA                      |
| Antenna Tower Controller<br>inn-co GmbH | CO2000                       | 019303      | NA                  | NA                      |
| Turn Table<br>BV ADT                    | TT100.                       | TT93021704  | NA                  | NA                      |
| Turn Table Controller<br>BV ADT         | SC100.                       | SC93021704  | NA                  | NA                      |
| Mini-Circuits Power Splitter            | ZN2PD-9G                     | NA          | Apr. 25, 2014       | Apr. 24, 2015           |
| JFW 20dB attenuation                    | 50HF-020-SMA                 | NA          | NA                  | NA                      |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 4.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 460141.

5. The IC Site Registration No. is IC 7450F-4.

### 3 General Information

#### 3.1 General Description of EUT

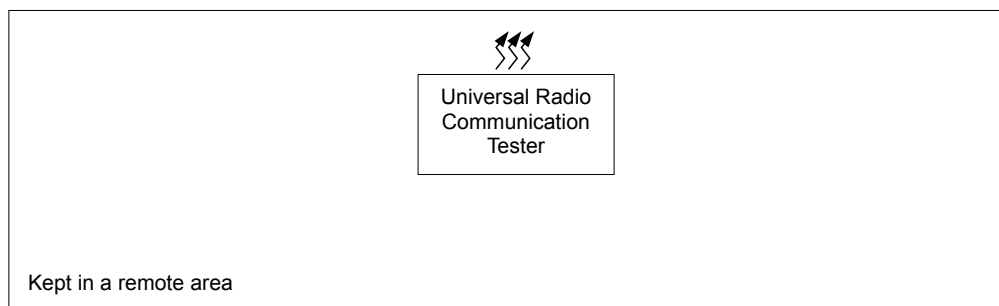
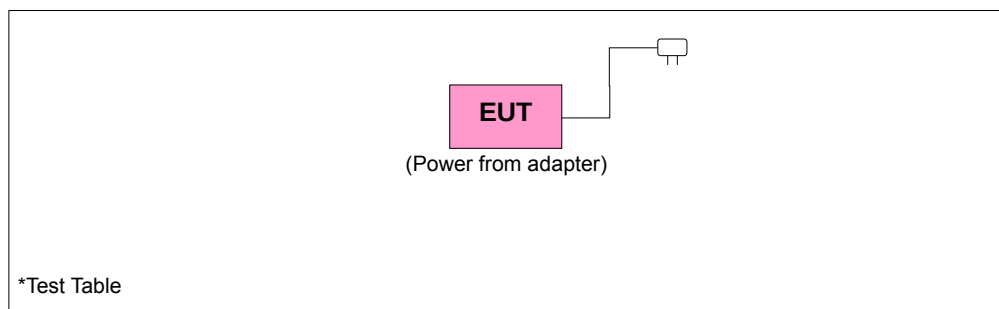
|                     |                                    |                                                              |                       |
|---------------------|------------------------------------|--------------------------------------------------------------|-----------------------|
| Product             | Smart phone                        |                                                              |                       |
| Brand               | Motorola Solutions Inc             |                                                              |                       |
| Test Model          | LEX L10                            |                                                              |                       |
| Status of EUT       | Prototype                          |                                                              |                       |
| Power Supply Rating | 3.7Vdc (Battery)<br>5Vdc (Adapter) |                                                              |                       |
| Mode of operation   | LTE Band 4, 13, 14                 |                                                              |                       |
| Modulation Type     | QPSK, 16QAM                        |                                                              |                       |
| Operating Frequency | LTE Band 4                         | Channel Bandwidth 1.4MHz                                     | 1710.7MHz ~ 1754.3MHz |
|                     |                                    | Channel Bandwidth 3MHz                                       | 1711.5MHz ~ 1753.5MHz |
|                     |                                    | Channel Bandwidth 5MHz                                       | 1712.5MHz ~ 1752.5MHz |
|                     |                                    | Channel Bandwidth 10MHz                                      | 1715MHz ~ 1750MHz     |
|                     |                                    | Channel Bandwidth 15MHz                                      | 1715.5MHz ~ 1747.5MHz |
|                     |                                    | Channel Bandwidth 20MHz                                      | 1720MHz ~ 1745MHz     |
|                     | LTE Band 13                        | Channel Bandwidth 5MHz                                       | 779.5MHz ~ 784.5MHz   |
|                     |                                    | Channel Bandwidth 10MHz                                      | 782MHz                |
|                     | LTE Band 14                        | Channel Bandwidth 5MHz                                       | 790.5MHz              |
| Max. EIRP Power     | LTE Band 4                         | Channel Bandwidth 1.4MHz                                     | 387.258mW (25.88dBm)  |
|                     |                                    | Channel Bandwidth 3MHz                                       | 293.765mW (24.68dBm)  |
|                     |                                    | Channel Bandwidth 5MHz                                       | 298.538mW (24.75dBm)  |
|                     |                                    | Channel Bandwidth 10MHz                                      | 281.190mW (24.49dBm)  |
|                     |                                    | Channel Bandwidth 15MHz                                      | 271.019mW (24.33dBm)  |
|                     |                                    | Channel Bandwidth 20MHz                                      | 301.995mW (24.80dBm)  |
| Max. ERP Power      | LTE Band 13                        | Channel Bandwidth 5MHz                                       | 199.526mW (23.00dBm)  |
|                     |                                    | Channel Bandwidth 10MHz                                      | 110.154mW (20.42dBm)  |
|                     | LTE Band 14                        | Channel Bandwidth 5MHz                                       | 253.513mW (24.04dBm)  |
| Antenna Type        | LTE Band 4                         | Inverted-L with parasitic element antenna with -0.23dBi gain |                       |
|                     | LTE Band 13                        | Inverted-L with parasitic element antenna with -0.93dBi gain |                       |
|                     | LTE Band 14                        | Inverted-L with parasitic element antenna with -1.13dBi gain |                       |
| Antenna Connector   | Coaxial connector with switch      |                                                              |                       |
| Accessory Device    | Refer to Note for more details     |                                                              |                       |
| Data Cable Supplied | Refer to Note for more details     |                                                              |                       |
| SW Version          | M8974AAAAANLYD4050.1               |                                                              |                       |
| HW Version          | MSM-8974-1-990BPNSP-TR-01-0-AB     |                                                              |                       |

Note:

1. The EUT contains following accessory devices and data cable.

| Item                                            | Brand    | Model or P/N                        | Specification                                     |
|-------------------------------------------------|----------|-------------------------------------|---------------------------------------------------|
| Rechargeable Lithium ion battery                | MOTOROLA | PMNN4472A                           | 3.7Vdc, 2340mAh, 8.7Wh                            |
| Rechargeable Lithium ion battery                | MOTOROLA | PMNN4475A                           | 3.7Vdc, 4560mAh, 16.9Wh                           |
| ITE power supply                                | MOTOROLA | IU08-2050120-WP<br>(P/N: HKTN4008A) | I/P: 100-240Vac, 50-60Hz, 0.2A<br>O/P: 5Vdc, 1.2A |
| USB cable<br>(CABLE: ES400 USB SYNC AND CHARGE) | N/A      | P/N: CKN6969A                       | 1.4m shielded cable without core                  |
| Holster                                         | N/A      | P/N: HKLN4618A                      | -                                                 |

### 3.2 Configuration of System Under Test



#### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Product                              | Brand | Model No. | Serial No. | FCC ID |
|-----|--------------------------------------|-------|-----------|------------|--------|
| 1   | Universal Radio Communication Tester | R&S   | CMU200    | 123112     | NA     |

| NO. | Signal Cable Description Of The Above Support Units |
|-----|-----------------------------------------------------|
| 1   | NA                                                  |

Note:

- All power cords of the above support units are non shielded (1.8m).
- Item 1 acted as a communication partner to transfer data.

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on Z-plane for LTE Band 4 and X-plane for LTE Band 4. Following channel(s) was (were) selected for the final test as listed below:

#### LTE Band 4

| Test Item           | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                                                              |
|---------------------|-------------------|---------------------|-------------------|-------------|-------------------------------------------------------------------|
| Output Power        | 19957 to 20393    | 19957, 20175, 20393 | 1.4MHz            | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
|                     | 19965 to 20385    | 19965, 20175, 20385 | 3MHz              | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
|                     | 19975 to 20375    | 19975, 20175, 20375 | 5MHz              | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
|                     | 20000 to 20350    | 20000, 20175, 20350 | 10MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
|                     | 20025 to 20325    | 20025, 20175, 20325 | 15MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
|                     | 20050 to 20300    | 20050, 20175, 20300 | 20MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset                                                |
| Frequency Stability | 19957 to 20393    | 20175               | 1.4MHz            | QPSK        | 1 RB / 0 RB Offset                                                |
|                     | 19965 to 20385    | 20175               | 3MHz              | QPSK        | 1 RB / 0 RB Offset                                                |
|                     | 19975 to 20375    | 20175               | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                                |
|                     | 20000 to 20350    | 20175               | 10MHz             | QPSK        | 1 RB / 0 RB Offset                                                |
|                     | 20025 to 20325    | 20175               | 15MHz             | QPSK        | 1 RB / 0 RB Offset                                                |
|                     | 20050 to 20300    | 20175               | 20MHz             | QPSK        | 1 RB / 0 RB Offset                                                |
| Emission Bandwidth  | 19957 to 20393    | 19957, 20175, 20393 | 1.4MHz            | QPSK, 16QAM | 6 RB / 0 RB Offset                                                |
|                     | 19965 to 20385    | 19965, 20175, 20385 | 3MHz              | QPSK, 16QAM | 15 RB / 0 RB Offset                                               |
|                     | 19975 to 20375    | 19975, 20175, 20375 | 5MHz              | QPSK, 16QAM | 25 RB / 0 RB Offset                                               |
|                     | 20000 to 20350    | 20000, 20175, 20350 | 10MHz             | QPSK, 16QAM | 50 RB / 0 RB Offset                                               |
|                     | 20025 to 20325    | 20025, 20175, 20325 | 15MHz             | QPSK, 16QAM | 75 RB / 0 RB Offset                                               |
|                     | 20050 to 20300    | 20050, 20175, 20300 | 20MHz             | QPSK, 16QAM | 100 RB / 0 RB Offset                                              |
| Channel Edge        | 19957 to 20393    | 19957, 20393        | 1.4MHz            | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset    |
|                     | 19965 to 20385    | 19965, 20385        | 3MHz              | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset  |
|                     | 19975 to 20375    | 19975, 20375        | 5MHz              | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset  |
|                     | 20000 to 20350    | 20000, 20350        | 10MHz             | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset  |
|                     | 20025 to 20325    | 20025, 20325        | 15MHz             | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset  |
|                     | 20050 to 20300    | 20050, 20300        | 20MHz             | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |

| Test Item                       | Available Channel | Tested Channel      | Channel Bandwidth | Modulation | Mode               |
|---------------------------------|-------------------|---------------------|-------------------|------------|--------------------|
| Conducted Emission              | 19957 to 20393    | 19957, 20175, 20393 | 1.4MHz            | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19965 to 20385    | 19965, 20175, 20385 | 3MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19975 to 20375    | 19975, 20175, 20375 | 5MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20000 to 20350    | 20000, 20175, 20350 | 10MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20025 to 20325    | 20025, 20175, 20325 | 15MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20050 to 20300    | 20050, 20175, 20300 | 20MHz             | QPSK       | 1 RB / 0 RB Offset |
| Radiated Emission<br>Below 1GHz | 19957 to 20393    | 19957               | 1.4MHz            | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19965 to 20385    | 19965               | 3MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19975 to 20375    | 19975               | 5MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20000 to 20350    | 20000               | 10MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20025 to 20325    | 20025               | 15MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20050 to 20300    | 20050               | 20MHz             | QPSK       | 1 RB / 0 RB Offset |
| Radiated Emission<br>Above 1GHz | 19957 to 20393    | 19957, 20175, 20393 | 1.4MHz            | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19965 to 20385    | 19965, 20175, 20385 | 3MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 19975 to 20375    | 19975, 20175, 20375 | 5MHz              | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20000 to 20350    | 20000, 20175, 20350 | 10MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20025 to 20325    | 20025, 20175, 20325 | 15MHz             | QPSK       | 1 RB / 0 RB Offset |
|                                 | 20050 to 20300    | 20050, 20175, 20300 | 20MHz             | QPSK       | 1 RB / 0 RB Offset |

#### LTE Band 13

| Test Item                       | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode                                                             |
|---------------------------------|-------------------|---------------------|-------------------|-------------|------------------------------------------------------------------|
| Output Power                    | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK, 16QAM | 1 RB / 0 RB Offset                                               |
|                                 | 23230             | 23230               | 10MHz             | QPSK, 16QAM | 1 RB / 0 RB Offset                                               |
| Frequency Stability             | 23205 to 23255    | 23230               | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
|                                 | 23230             | 23230               | 10MHz             | QPSK        | 1 RB / 0 RB Offset                                               |
| Emission Bandwidth              | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK, 16QAM | 25 RB / 0 RB Offset                                              |
|                                 | 23230             | 23230               | 10MHz             | QPSK, 16QAM | 50 RB / 0 RB Offset                                              |
| Channel Edge                    | 23205 to 23255    | 23205, 23255        | 5MHz              | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset |
|                                 | 23230             | 23230               | 10MHz             | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset |
| Conducted Emission              | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
|                                 | 23230             | 23230               | 10MHz             | QPSK        | 1 RB / 0 RB Offset                                               |
| Radiated Emission<br>Below 1GHz | 23205 to 23255    | 23205               | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
|                                 | 23230             | 23230               | 10MHz             | QPSK        | 1 RB / 0 RB Offset                                               |
| Radiated Emission<br>Above 1GHz | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
|                                 | 23230             | 23230               | 10MHz             | QPSK        | 1 RB / 0 RB Offset                                               |

# LTE Band 14

| Test Item                    | Available Channel | Tested Channel | Channel Bandwidth | Modulation  | Mode                                                             |
|------------------------------|-------------------|----------------|-------------------|-------------|------------------------------------------------------------------|
| Output Power                 | 23305             | 23305          | 5MHz              | QPSK, 16QAM | 1 RB / 0 RB Offset                                               |
| Frequency Stability          | 23305             | 23305          | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
| Emission Bandwidth           | 23305             | 23305          | 5MHz              | QPSK, 16QAM | 25 RB / 0 RB Offset                                              |
| Channel Edge                 | 23305             | 23305          | 5MHz              | QPSK        | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset |
| Conducted Emission           | 23305             | 23305          | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
| Radiated Emission Below 1GHz | 23305             | 23305          | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |
| Radiated Emission Above 1GHz | 23305             | 23305          | 5MHz              | QPSK        | 1 RB / 0 RB Offset                                               |

## NOTE:

1. For radiated emission below 1 GHz, the low, mid and high channels were pre-tested in chamber. The low channel was the worst case and chosen for final test.
2. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Output Power, Emission Bandwidth had been tested under QPSK and 16QAM modes, the others test items were performed under QPSK mode only.

## Test Condition:

| Test Item           | Environmental Conditions | Input Power  | Tested By  |
|---------------------|--------------------------|--------------|------------|
| Output Power        | 24deg. C, 63%RH          | 120Vac, 60Hz | Chris Lin  |
| Frequency Stability | 24deg. C, 64%RH          | 3.7Vdc       | Match Tsui |
| Emission Bandwidth  | 24deg. C, 64%RH          | 120Vac, 60Hz | Match Tsui |
| Channel Edge        | 24deg. C, 64%RH          | 120Vac, 60Hz | Match Tsui |
| Conducted Emission  | 24deg. C, 64%RH          | 120Vac, 60Hz | Match Tsui |
| Radiated Emission   | 24deg. C, 63%RH          | 120Vac, 60Hz | Chris Lin  |

### 3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

### 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v02r02**

**ANSI/TIA/EIA-603-C 2004**

**NOTE:** All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 1 watts e.i.r.p for LTE Band 4 and 3 watts e.r.p for LTE Band 13 & 14.

#### 4.1.2 Test Procedures

##### EIRP / ERP Measurement:

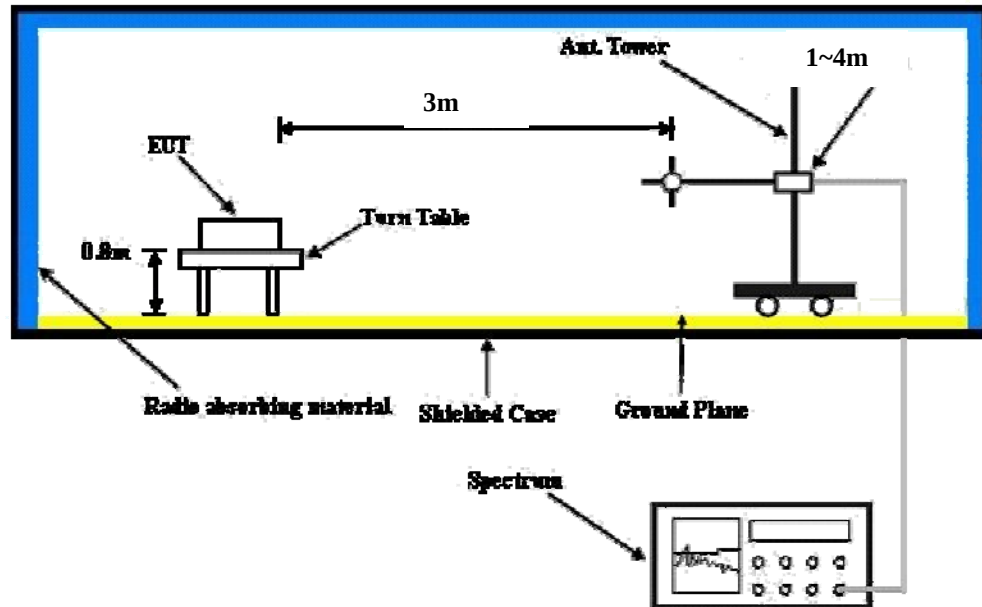
- a. All measurements were done at low, middle and high operational frequency range. RWB and VBW is 5MHz for LTE.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dBi}$ .

##### Conducted Power Measurement:

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

### 4.1.3 Test Setup

EIRP / ERP MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.4 Test Results

##### CONDUCTED OUTPUT POWER (dBm)

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|-----------|---------|-----------|--------------|--------------|---------------|--------------|--------------|---------------|
|           |         |           | Low CH 19957 | Mid CH 20175 | High CH 20393 | Low CH 19957 | Mid CH 20175 | High CH 20393 |
|           |         |           | 1710.7 MHz   | 1732.5 MHz   | 1754.3 MHz    | 1710.7 MHz   | 1732.5 MHz   | 1754.3 MHz    |
| 4 / 1.4M  | 1       | 0         | 22.89        | 23.05        | <b>23.07</b>  | 21.88        | 22.04        | <b>22.06</b>  |
|           | 1       | 2         | 22.80        | 22.96        | 22.98         | 21.79        | 21.95        | 21.97         |
|           | 1       | 5         | 22.66        | 22.82        | 22.84         | 21.65        | 21.81        | 21.83         |
|           | 3       | 0         | 21.95        | 22.11        | 22.13         | 20.94        | 21.10        | 21.12         |
|           | 3       | 1         | 21.92        | 22.08        | 22.10         | 20.91        | 21.07        | 21.09         |
|           | 3       | 3         | 21.83        | 21.99        | 22.01         | 20.82        | 20.98        | 21.00         |
|           | 6       | 0         | 21.81        | 21.97        | 21.99         | 20.80        | 20.96        | 20.98         |
| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|           |         |           | Low CH 19965 | Mid CH 20175 | High CH 20385 | Low CH 19965 | Mid CH 20175 | High CH 20385 |
|           |         |           | 1711.5 MHz   | 1732.5 MHz   | 1753.5 MHz    | 1711.5 MHz   | 1732.5 MHz   | 1753.5 MHz    |
| 4 / 3M    | 1       | 0         | 23.01        | 23.17        | <b>23.19</b>  | 22.00        | 22.16        | <b>22.18</b>  |
|           | 1       | 7         | 22.92        | 23.08        | 23.10         | 21.91        | 22.07        | 22.09         |
|           | 1       | 14        | 22.78        | 22.94        | 22.96         | 21.77        | 21.93        | 21.95         |
|           | 8       | 0         | 22.07        | 22.23        | 22.25         | 21.06        | 21.22        | 21.24         |
|           | 8       | 3         | 22.04        | 22.20        | 22.22         | 21.03        | 21.19        | 21.21         |
|           | 8       | 7         | 21.95        | 22.11        | 22.13         | 20.94        | 21.10        | 21.12         |
|           | 15      | 0         | 21.93        | 22.09        | 22.11         | 20.92        | 21.08        | 21.10         |
| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|           |         |           | Low CH 19975 | Mid CH 20175 | High CH 20375 | Low CH 19975 | Mid CH 20175 | High CH 20375 |
|           |         |           | 1712.5 MHz   | 1732.5 MHz   | 1752.5 MHz    | 1712.5 MHz   | 1732.5 MHz   | 1752.5 MHz    |
| 4 / 5M    | 1       | 0         | 23.13        | 23.29        | <b>23.31</b>  | 22.12        | 22.28        | <b>22.30</b>  |
|           | 1       | 12        | 23.04        | 23.20        | 23.22         | 22.03        | 22.19        | 22.21         |
|           | 1       | 24        | 22.90        | 23.06        | 23.08         | 21.89        | 22.05        | 22.07         |
|           | 12      | 0         | 22.19        | 22.35        | 22.37         | 21.18        | 21.34        | 21.36         |
|           | 12      | 6         | 22.16        | 22.32        | 22.34         | 21.15        | 21.31        | 21.33         |
|           | 12      | 13        | 22.07        | 22.23        | 22.25         | 21.06        | 21.22        | 21.24         |
|           | 25      | 0         | 22.05        | 22.21        | 22.23         | 21.04        | 21.20        | 21.22         |

| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|-----------|---------|-----------|--------------|--------------|---------------|--------------|--------------|---------------|
|           |         |           | Low CH 20000 | Mid CH 20175 | High CH 20350 | Low CH 20000 | Mid CH 20175 | High CH 20350 |
|           |         |           | 1715 MHz     | 1732.5 MHz   | 1750 MHz      | 1715 MHz     | 1732.5 MHz   | 1750 MHz      |
| 4 / 10M   | 1       | 0         | 23.25        | 23.41        | <b>23.43</b>  | 22.24        | 22.40        | <b>22.42</b>  |
|           | 1       | 24        | 23.16        | 23.32        | 23.34         | 22.15        | 22.31        | 22.33         |
|           | 1       | 49        | 23.02        | 23.18        | 23.20         | 22.01        | 22.17        | 22.19         |
|           | 25      | 0         | 22.31        | 22.47        | 22.49         | 21.30        | 21.46        | 21.48         |
|           | 25      | 12        | 22.28        | 22.44        | 22.46         | 21.27        | 21.43        | 21.45         |
|           | 25      | 25        | 22.19        | 22.35        | 22.37         | 21.18        | 21.34        | 21.36         |
|           | 50      | 0         | 22.17        | 22.33        | 22.35         | 21.16        | 21.32        | 21.34         |
| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|           |         |           | Low CH 20025 | Mid CH 20175 | High CH 20325 | Low CH 20025 | Mid CH 20175 | High CH 20325 |
|           |         |           | 1717.5 MHz   | 1732.5 MHz   | 1747.5 MHz    | 1717.5 MHz   | 1732.5 MHz   | 1747.5 MHz    |
| 4 / 15M   | 1       | 0         | 23.37        | 23.53        | <b>23.55</b>  | 22.36        | 22.52        | <b>22.54</b>  |
|           | 1       | 37        | 23.28        | 23.44        | 23.46         | 22.27        | 22.43        | 22.45         |
|           | 1       | 74        | 23.14        | 23.30        | 23.32         | 22.13        | 22.29        | 22.31         |
|           | 36      | 0         | 22.43        | 22.59        | 22.61         | 21.42        | 21.58        | 21.60         |
|           | 36      | 19        | 22.40        | 22.56        | 22.58         | 21.39        | 21.55        | 21.57         |
|           | 36      | 39        | 22.31        | 22.47        | 22.49         | 21.30        | 21.46        | 21.48         |
|           | 75      | 0         | 22.29        | 22.45        | 22.47         | 21.28        | 21.44        | 21.46         |
| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|           |         |           | Low CH 20050 | Mid CH 20175 | High CH 20300 | Low CH 20050 | Mid CH 20175 | High CH 20300 |
|           |         |           | 1720 MHz     | 1732.5 MHz   | 1745 MHz      | 1720 MHz     | 1732.5 MHz   | 1745 MHz      |
| 4 / 20M   | 1       | 0         | 23.49        | 23.65        | <b>23.67</b>  | 22.48        | 22.64        | <b>22.66</b>  |
|           | 1       | 50        | 23.40        | 23.56        | 23.58         | 22.39        | 22.55        | 22.57         |
|           | 1       | 99        | 23.26        | 23.42        | 23.44         | 22.25        | 22.41        | 22.43         |
|           | 50      | 0         | 22.55        | 22.71        | 22.73         | 21.54        | 21.70        | 21.72         |
|           | 50      | 25        | 22.52        | 22.68        | 22.70         | 21.51        | 21.67        | 21.69         |
|           | 50      | 50        | 22.43        | 22.59        | 22.61         | 21.42        | 21.58        | 21.60         |
|           | 100     | 0         | 22.41        | 22.57        | 22.59         | 21.40        | 21.56        | 21.58         |
| Band / BW | RB Size | RB Offset | QPSK         |              |               | 16QAM        |              |               |
|           |         |           | Low CH 23205 | Mid CH 23230 | High CH 23255 | Low CH 23205 | Mid CH 23230 | High CH 23255 |
|           |         |           | 779.5 MHz    | 782 MHz      | 784.5 MHz     | 779.5 MHz    | 782 MHz      | 784.5 MHz     |
| 13 / 5M   | 1       | 0         | <b>23.75</b> | 23.65        | 23.66         | <b>22.73</b> | 22.63        | 22.64         |
|           | 1       | 12        | 23.73        | 23.63        | 23.64         | 22.71        | 22.61        | 22.62         |
|           | 1       | 24        | 23.72        | 23.62        | 23.63         | 22.70        | 22.60        | 22.61         |
|           | 12      | 0         | 22.71        | 22.61        | 22.62         | 21.69        | 21.59        | 21.60         |
|           | 12      | 6         | 22.66        | 22.56        | 22.57         | 21.64        | 21.54        | 21.55         |
|           | 12      | 13        | 22.67        | 22.57        | 22.58         | 21.65        | 21.55        | 21.56         |
|           | 25      | 0         | 22.68        | 22.58        | 22.59         | 21.66        | 21.56        | 21.57         |

| Band /<br>BW | RB<br>Size | RB<br>Offset | QPSK         | 16QAM        |
|--------------|------------|--------------|--------------|--------------|
|              |            |              | Mid CH 23230 | Mid CH 23230 |
|              |            |              | 782MHz       | 782MHz       |
| 13 / 10M     | 1          | 0            | <b>23.71</b> | <b>22.68</b> |
|              | 1          | 24           | 23.66        | 22.63        |
|              | 1          | 49           | 23.64        | 22.61        |
|              | 25         | 0            | 22.60        | 21.57        |
|              | 25         | 12           | 22.55        | 21.52        |
|              | 25         | 25           | 22.56        | 21.53        |
|              | 50         | 0            | 22.61        | 21.58        |
| Band /<br>BW | RB<br>Size | RB<br>Offset | QPSK         | 16QAM        |
|              |            |              | Low CH 23305 | Low CH 23305 |
|              |            |              | 790.5MHz     | 790.5MHz     |
| 14 / 5M      | 1          | 0            | 23.64        | 22.62        |
|              | 1          | 12           | 23.51        | 22.49        |
|              | 1          | 24           | 23.56        | 22.54        |
|              | 12         | 0            | 22.50        | 21.48        |
|              | 12         | 6            | 22.44        | 21.42        |
|              | 12         | 13           | 22.47        | 21.45        |
|              | 25         | 0            | 22.48        | 21.46        |

EIRP Power (dBm)

LTE Band 4

For Channel Bandwidth:

1.4MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19957 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1710.70     | -15.69           | 22.76                 | 0.99                   | 23.75      | 30.00       | -6.25       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1710.70     | -14.51           | 24.72                 | 0.99                   | 25.71      | 30.00       | -4.29       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -14.95           | 23.70                 | 1.01                   | 24.71      | 30.00       | -5.29       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -14.33           | 24.87                 | 1.01                   | 25.88      | 30.00       | -4.12       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20393 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1754.30     | -15.42           | 23.43                 | 1.02                   | 24.45      | 30.00       | -5.55       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1754.30     | -14.98           | 24.20                 | 1.02                   | 25.22      | 30.00       | -4.78       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 1.4MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19957 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1710.70     | -16.19           | 22.26                 | 0.99                   | 23.25      | 30.00       | -6.75       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1710.70     | -15.01           | 24.22                 | 0.99                   | 25.21      | 30.00       | -4.79       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -15.45           | 23.20                 | 1.01                   | 24.21      | 30.00       | -5.79       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -14.83           | 24.37                 | 1.01                   | 25.38      | 30.00       | -4.62       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20393 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1754.30     | -15.92           | 22.93                 | 1.02                   | 23.95      | 30.00       | -6.05       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1754.30     | -15.48           | 23.70                 | 1.02                   | 24.72      | 30.00       | -5.28       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

3MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19965 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1711.50     | -16.63           | 21.83                 | 0.99                   | 22.82      | 30.00       | -7.18       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1711.50     | -15.54           | 23.69                 | 0.99                   | 24.68      | 30.00       | -5.32       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.54           | 21.11                 | 1.01                   | 22.12      | 30.00       | -7.88       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.00           | 23.20                 | 1.01                   | 24.21      | 30.00       | -5.79       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20385 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1753.50     | -17.35           | 21.49                 | 1.02                   | 22.51      | 30.00       | -7.49       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1753.50     | -15.70           | 23.48                 | 1.02                   | 24.50      | 30.00       | -5.50       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 3MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19965 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1711.50     | -17.13           | 21.33                 | 0.99                   | 22.32      | 30.00       | -7.68       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1711.50     | -16.04           | 23.19                 | 0.99                   | 24.18      | 30.00       | -5.82       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -18.04           | 20.61                 | 1.01                   | 21.62      | 30.00       | -8.38       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.50           | 22.70                 | 1.01                   | 23.71      | 30.00       | -6.29       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20385 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1753.50     | -17.85           | 20.99                 | 1.02                   | 22.01      | 30.00       | -7.99       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1753.50     | -16.20           | 22.98                 | 1.02                   | 24.00      | 30.00       | -6.00       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

5MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19975 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1712.50     | -16.85           | 21.62                 | 0.99                   | 22.61      | 30.00       | -7.39       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1712.50     | -15.90           | 23.33                 | 0.99                   | 24.32      | 30.00       | -5.68       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.78           | 21.87                 | 1.01                   | 22.88      | 30.00       | -7.12       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -15.63           | 23.57                 | 1.01                   | 24.58      | 30.00       | -5.42       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20375 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1752.50     | -17.20           | 21.63                 | 1.02                   | 22.65      | 30.00       | -7.35       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1752.50     | -15.45           | 23.73                 | 1.02                   | 24.75      | 30.00       | -5.25       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 5MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19975 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1712.50     | -17.35           | 21.12                 | 0.99                   | 22.11      | 30.00       | -7.89       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1712.50     | -16.40           | 22.83                 | 0.99                   | 23.82      | 30.00       | -6.18       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.28           | 21.37                 | 1.01                   | 22.38      | 30.00       | -7.62       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.13           | 23.07                 | 1.01                   | 24.08      | 30.00       | -5.92       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20375 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1752.50     | -17.70           | 21.13                 | 1.02                   | 22.15      | 30.00       | -7.85       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1752.50     | -15.95           | 23.23                 | 1.02                   | 24.25      | 30.00       | -5.75       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

10MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20000 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1715.00     | -17.18           | 21.32                 | 0.99                   | 22.31      | 30.00       | -7.69       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1715.00     | -15.73           | 23.50                 | 0.99                   | 24.49      | 30.00       | -5.51       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.61           | 21.04                 | 1.01                   | 22.05      | 30.00       | -7.95       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.19           | 23.01                 | 1.01                   | 24.02      | 30.00       | -5.98       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20350 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1750.00     | -17.06           | 21.76                 | 1.01                   | 22.77      | 30.00       | -7.23       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1750.00     | -15.76           | 23.44                 | 1.01                   | 24.45      | 30.00       | -5.55       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

10MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20000 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1715.00     | -17.68           | 20.82                 | 0.99                   | 21.81      | 30.00       | -8.19       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1715.00     | -16.23           | 23.00                 | 0.99                   | 23.99      | 30.00       | -6.01       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -18.11           | 20.54                 | 1.01                   | 21.55      | 30.00       | -8.45       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.69           | 22.51                 | 1.01                   | 23.52      | 30.00       | -6.48       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20350 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1750.00     | -17.56           | 21.26                 | 1.01                   | 22.27      | 30.00       | -7.73       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1750.00     | -16.26           | 22.94                 | 1.01                   | 23.95      | 30.00       | -6.05       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

15MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20025 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1717.50     | -16.78           | 21.74                 | 0.99                   | 22.73      | 30.00       | -7.27       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1717.50     | -16.12           | 23.11                 | 0.99                   | 24.10      | 30.00       | -5.90       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.09           | 21.56                 | 1.01                   | 22.57      | 30.00       | -7.43       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -15.88           | 23.32                 | 1.01                   | 24.33      | 30.00       | -5.67       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20325 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1747.50     | -16.82           | 21.97                 | 1.01                   | 22.98      | 30.00       | -7.02       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1747.50     | -16.05           | 23.15                 | 1.01                   | 24.16      | 30.00       | -5.84       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 15MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20025 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1717.50     | -17.28           | 21.24                 | 0.99                   | 22.23      | 30.00       | -7.77       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1717.50     | -16.62           | 22.61                 | 0.99                   | 23.60      | 30.00       | -6.40       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.59           | 21.06                 | 1.01                   | 22.07      | 30.00       | -7.93       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.38           | 22.82                 | 1.01                   | 23.83      | 30.00       | -6.17       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20325 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1747.50     | -17.32           | 21.47                 | 1.01                   | 22.48      | 30.00       | -7.52       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1747.50     | -16.55           | 22.65                 | 1.01                   | 23.66      | 30.00       | -6.34       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

20MHz QPSK

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20050 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1720.00     | -17.18           | 21.35                 | 1.00                   | 22.35      | 30.00       | -7.65       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1720.00     | -15.91           | 23.31                 | 1.00                   | 24.31      | 30.00       | -5.69       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.36           | 21.29                 | 1.01                   | 22.30      | 30.00       | -7.70       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -15.63           | 23.57                 | 1.01                   | 24.58      | 30.00       | -5.42       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20300 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1745.00     | -17.33           | 21.44                 | 1.01                   | 22.45      | 30.00       | -7.55       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1745.00     | -15.41           | 23.79                 | 1.01                   | 24.80      | 30.00       | -5.20       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 20MHz 16QAM

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20050 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1720.00     | -17.68           | 20.85                 | 1.00                   | 21.85      | 30.00       | -8.15       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1720.00     | -16.41           | 22.81                 | 1.00                   | 23.81      | 30.00       | -6.19       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20175 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -17.86           | 20.79                 | 1.01                   | 21.80      | 30.00       | -8.20       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1732.50     | -16.13           | 23.07                 | 1.01                   | 24.08      | 30.00       | -5.92       |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 20300 |                       |                        |            |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1745.00     | -17.83           | 20.94                 | 1.01                   | 21.95      | 30.00       | -8.05       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1745.00     | -15.91           | 23.29                 | 1.01                   | 24.30      | 30.00       | -5.70       |

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 13

For Channel Bandwidth:

5MHz QPSK

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23205 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 779.50      | -7.87            | 23.67                 | -1.07                  | 22.60     | 34.77       | -12.17      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 779.50      | -14.02           | 18.97                 | -1.07                  | 17.90     | 34.77       | -16.87      |

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23230 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -8.22            | 23.21                 | -1.01                  | 22.20     | 34.77       | -12.57      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -14.08           | 18.70                 | -1.01                  | 17.69     | 34.77       | -17.08      |

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23255 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 784.50      | -7.55            | 23.95                 | -0.95                  | 23.00     | 34.77       | -11.77      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 784.50      | -13.73           | 18.98                 | -0.95                  | 18.03     | 34.77       | -16.74      |

NOTE: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 5MHz 16QAM

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23205 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 779.50      | -8.37            | 23.17                 | -1.07                  | 22.10     | 34.77       | -12.67      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 779.50      | -14.52           | 18.47                 | -1.07                  | 17.40     | 34.77       | -17.37      |

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23230 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -8.72            | 22.71                 | -1.01                  | 21.70     | 34.77       | -13.07      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -14.58           | 18.20                 | -1.01                  | 17.19     | 34.77       | -17.58      |

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23255 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 784.50      | -8.05            | 23.45                 | -0.95                  | 22.50     | 34.77       | -12.27      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 784.50      | -14.23           | 18.48                 | -0.95                  | 17.53     | 34.77       | -17.24      |

NOTE: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

For Channel Bandwidth:

10MHz QPSK

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23230 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -10.00           | 21.43                 | -1.01                  | 20.42     | 34.77       | -14.35      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -17.38           | 15.40                 | -1.01                  | 14.39     | 34.77       | -20.38      |

NOTE: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

10MHz 16QAM

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23230 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -10.50           | 20.93                 | -1.01                  | 19.92     | 34.77       | -14.85      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 782.00      | -17.88           | 14.90                 | -1.01                  | 13.89     | 34.77       | -20.88      |

NOTE: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 14

For Channel Bandwidth:

5MHz QPSK

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23305 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 790.50      | -6.80            | 24.85                 | -0.81                  | 24.04     | 34.77       | -10.73      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 790.50      | -15.40           | 17.16                 | -0.81                  | 16.35     | 34.77       | -18.42      |

5MHz 16QAM

|                                                     |             |                  |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|-----------|-------------|-------------|
| MODE                                                |             | TX channel 23305 |                       |                        |           |             |             |
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 790.50      | -7.31            | 24.34                 | -0.81                  | 23.53     | 34.77       | -11.24      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |                  |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm)    | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 790.50      | -15.90           | 16.66                 | -0.81                  | 15.85     | 34.77       | -18.92      |

## 4.2 Frequency Stability Measurement

### 4.2.1 Limits of Frequency Stability Measurement

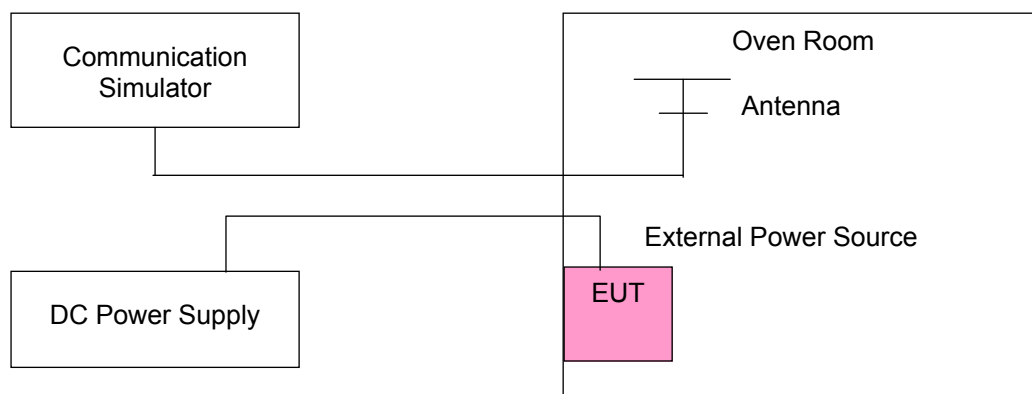
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

### 4.2.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

### 4.2.3 Test Setup



#### 4.2.4 Test Results

LTE Band 4

Frequency Error vs. Voltage

| Voltage (Volts) | Frequency Error (ppm) |        |        |        |        |        | Limit (ppm) |
|-----------------|-----------------------|--------|--------|--------|--------|--------|-------------|
|                 | 1.4M                  | 3M     | 5M     | 10M    | 15M    | 20M    |             |
| 4.25            | -0.008                | -0.008 | -0.008 | -0.007 | -0.007 | -0.006 | 2.5         |
| 3.70            | -0.008                | -0.007 | -0.008 | -0.006 | -0.008 | -0.008 | 2.5         |
| 3.45            | -0.007                | -0.006 | -0.008 | -0.006 | -0.008 | -0.007 | 2.5         |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.45Vdc to 4.25Vdc.

Frequency Error vs. Temperature.

| TEMP. (°C) | Frequency Error (ppm) |        |        |        |        |        | Limit (ppm) |
|------------|-----------------------|--------|--------|--------|--------|--------|-------------|
|            | 1.4M                  | 3M     | 5M     | 10M    | 15M    | 20M    |             |
| 60         | -0.012                | -0.014 | -0.012 | -0.015 | -0.017 | -0.017 | 2.5         |
| 50         | -0.012                | -0.012 | -0.012 | -0.014 | -0.017 | -0.018 | 2.5         |
| 40         | -0.011                | -0.012 | -0.011 | -0.012 | -0.016 | -0.016 | 2.5         |
| 30         | -0.010                | -0.010 | -0.009 | -0.009 | -0.009 | -0.014 | 2.5         |
| 20         | -0.008                | -0.007 | -0.008 | -0.006 | -0.008 | -0.008 | 2.5         |
| 10         | -0.009                | -0.009 | -0.009 | -0.009 | -0.012 | -0.011 | 2.5         |
| 0          | -0.011                | -0.012 | -0.010 | -0.011 | -0.014 | -0.017 | 2.5         |
| -10        | -0.015                | -0.015 | -0.015 | -0.016 | -0.017 | -0.018 | 2.5         |
| -20        | -0.016                | -0.017 | -0.017 | -0.018 | -0.017 | -0.018 | 2.5         |

# LTE Band 13

## Frequency Error vs. Voltage

| Voltage (Volts) | Frequency Error (ppm) |        | Limit (ppm) |
|-----------------|-----------------------|--------|-------------|
|                 | 5M                    | 10M    |             |
| 4.25            | -0.020                | -0.019 | 2.5         |
| 3.70            | -0.018                | -0.017 | 2.5         |
| 3.45            | -0.019                | -0.018 | 2.5         |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.45Vdc to 4.25Vdc.

## Frequency Error vs. Temperature.

| TEMP. (°C) | Frequency Error (ppm) |        | Limit (ppm) |
|------------|-----------------------|--------|-------------|
|            | 5M                    | 10M    |             |
| 60         | -0.028                | -0.032 | 2.5         |
| 50         | -0.026                | -0.033 | 2.5         |
| 40         | -0.027                | -0.031 | 2.5         |
| 30         | -0.024                | -0.022 | 2.5         |
| 20         | -0.018                | -0.017 | 2.5         |
| 10         | -0.020                | -0.020 | 2.5         |
| 0          | -0.024                | -0.028 | 2.5         |
| -10        | -0.031                | -0.033 | 2.5         |
| -20        | -0.038                | -0.037 | 2.5         |

# LTE Band 14

## Frequency Error vs. Voltage

| Voltage (Volts) | Frequency Error (ppm) | Limit (ppm) |
|-----------------|-----------------------|-------------|
|                 | 5M                    |             |
| 4.25            | -0.018                | 2.5         |
| 3.70            | -0.014                | 2.5         |
| 3.45            | -0.013                | 2.5         |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.45Vdc to 4.25Vdc.

## Frequency Error vs. Temperature.

| TEMP. (°C) | Frequency Error (ppm) | Limit (ppm) |
|------------|-----------------------|-------------|
|            | 5M                    |             |
| 60         | -0.029                | 2.5         |
| 50         | -0.030                | 2.5         |
| 40         | -0.027                | 2.5         |
| 30         | -0.020                | 2.5         |
| 20         | -0.014                | 2.5         |
| 10         | -0.019                | 2.5         |
| 0          | -0.027                | 2.5         |
| -10        | -0.034                | 2.5         |
| -20        | -0.043                | 2.5         |

### 4.3 Emission Bandwidth Measurement

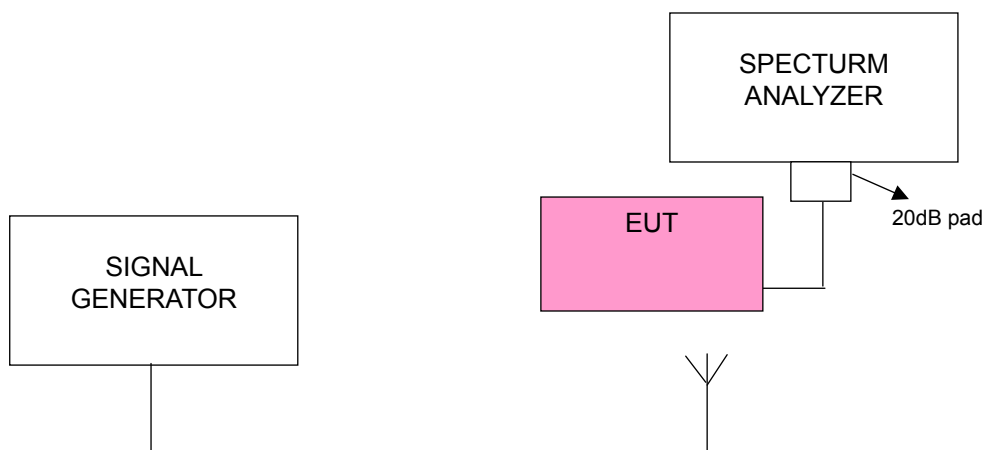
#### 4.3.1 Limits of Emission Bandwidth Measurement

According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

#### 4.3.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 30kHz and VBW = 100kHz (Channel Bandwidth: 1.4MHz), RBW = 51kHz and VBW = 150kHz (Channel Bandwidth: 3MHz and 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz), RBW = 200kHz and VBW = 620kHz (Channel Bandwidth: 15MHz) and RBW = 430kHz and VBW = 1.2MHz (Channel Bandwidth: 20MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

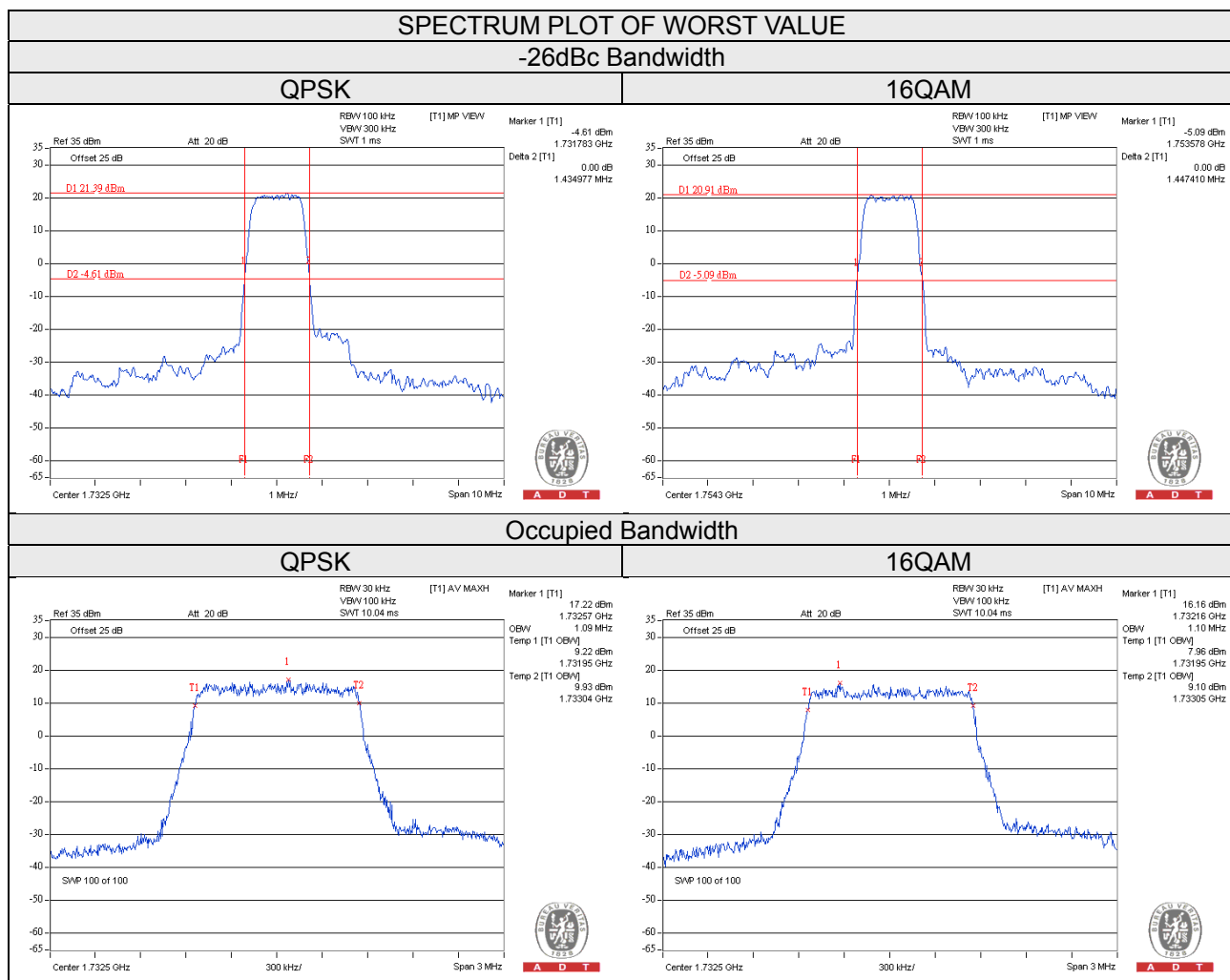
#### 4.3.3 Test Setup



#### 4.3.4 Test Result

##### LTE Band 4

| Channel Bandwidth: 1.4MHz |                 |                        |       |                          |       |
|---------------------------|-----------------|------------------------|-------|--------------------------|-------|
| Channel                   | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|                           |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 19957                     | 1710.7          | 1.41                   | 1.43  | 1.09                     | 1.09  |
| 20175                     | 1732.5          | 1.43                   | 1.43  | 1.09                     | 1.10  |
| 20393                     | 1754.3          | 1.43                   | 1.45  | 1.09                     | 1.09  |



## Channel Bandwidth: 3MHz

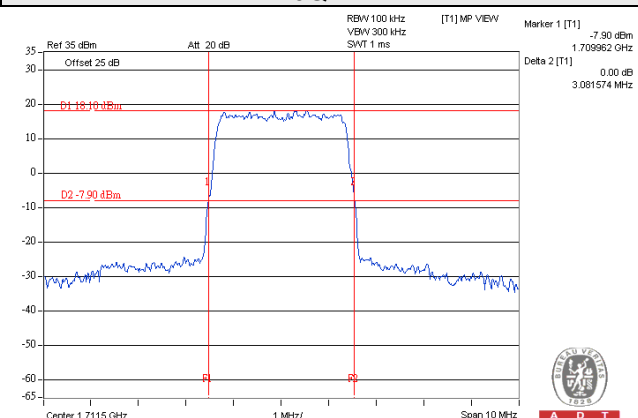
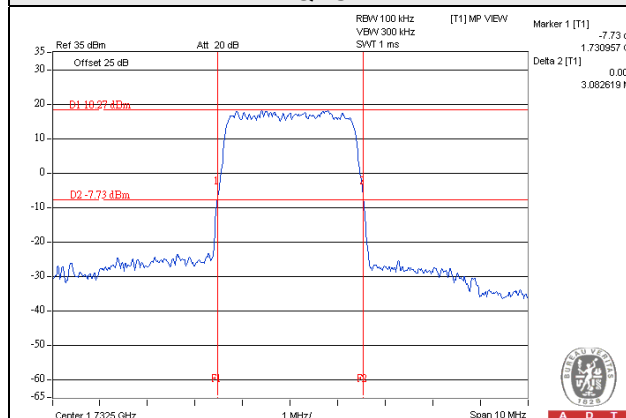
| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 19965   | 1711.5          | 3.06                   | 3.08  | 2.68                     | 2.69  |
| 20175   | 1732.5          | 3.08                   | 3.07  | 2.69                     | 2.69  |
| 20385   | 1753.5          | 3.05                   | 3.07  | 2.68                     | 2.69  |

## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

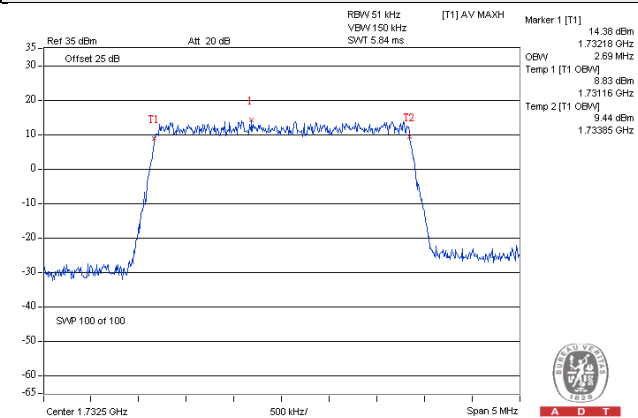
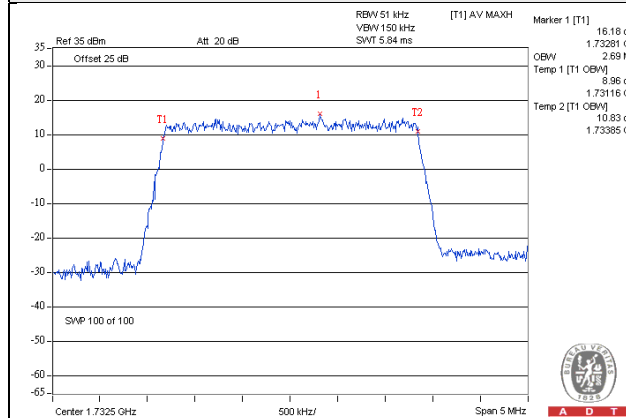
## 16QAM



## Occupied Bandwidth

## QPSK

## 16QAM



## Channel Bandwidth: 5MHz

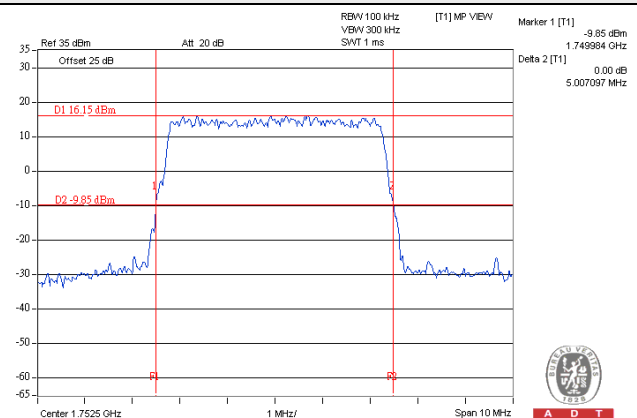
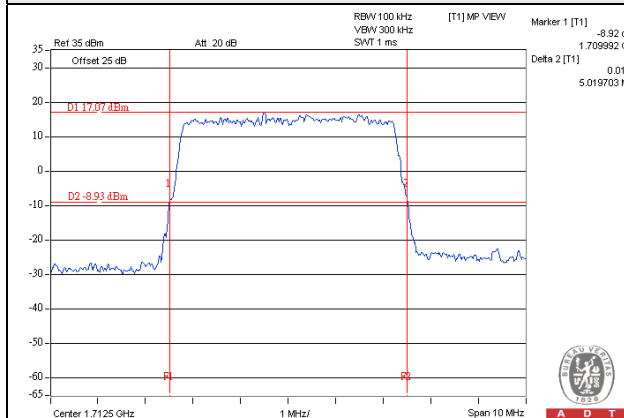
| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 19975   | 1712.5          | 5.02                   | 4.99  | 4.47                     | 4.48  |
| 20175   | 1732.5          | 4.95                   | 4.98  | 4.48                     | 4.45  |
| 20375   | 1752.5          | 4.98                   | 5.01  | 4.48                     | 4.47  |

## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

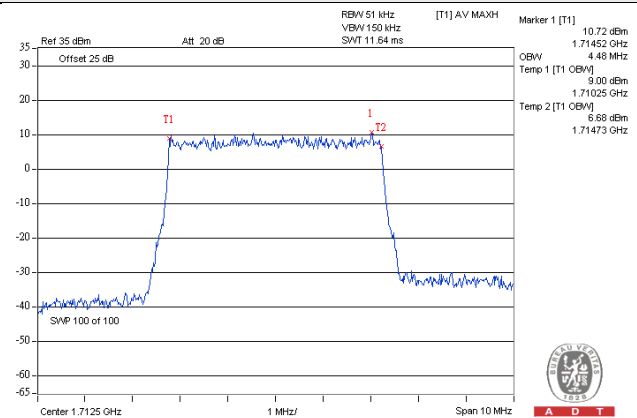
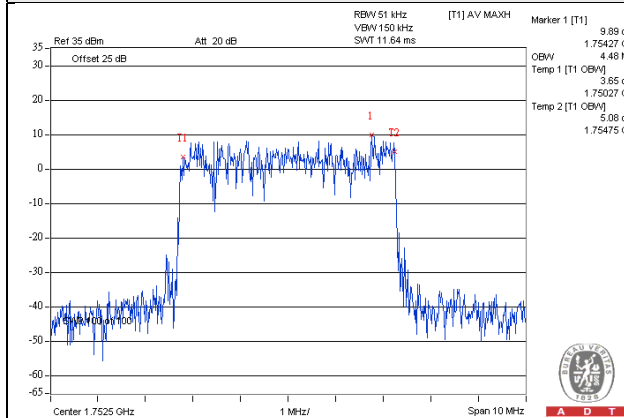
## 16QAM



## Occupied Bandwidth

## QPSK

## 16QAM



## Channel Bandwidth: 10MHz

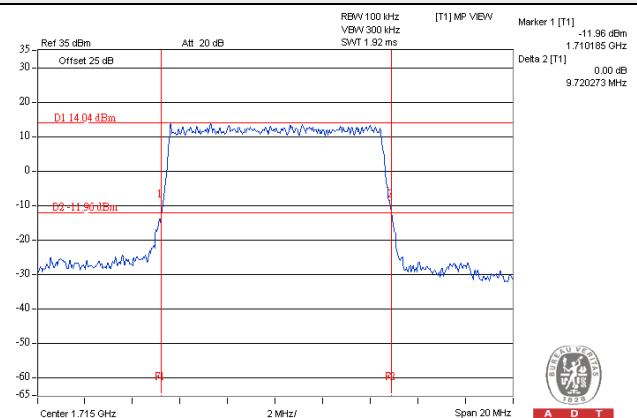
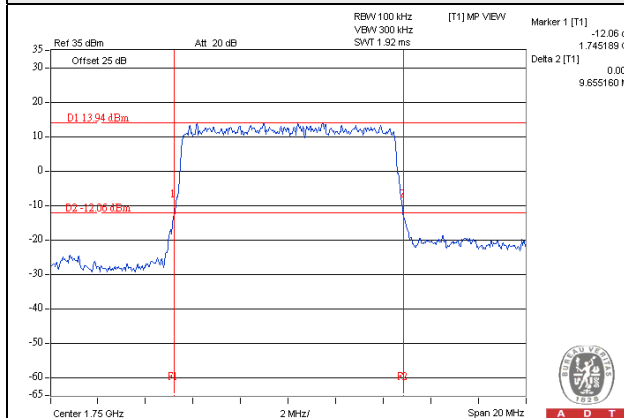
| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 20000   | 1715.0          | 9.63                   | 9.72  | 8.93                     | 8.90  |
| 20175   | 1732.5          | 9.63                   | 9.72  | 8.93                     | 8.93  |
| 20350   | 1750.0          | 9.66                   | 9.63  | 8.97                     | 8.90  |

## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

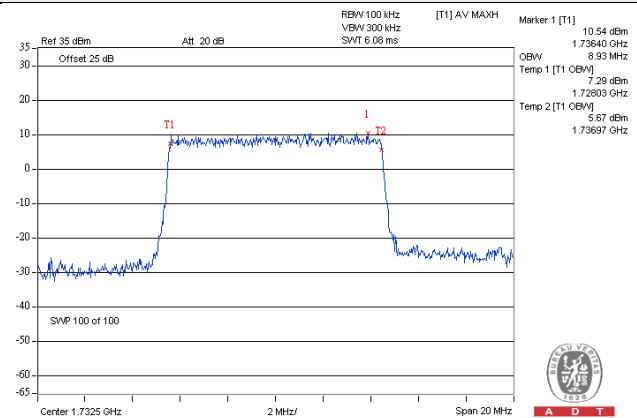
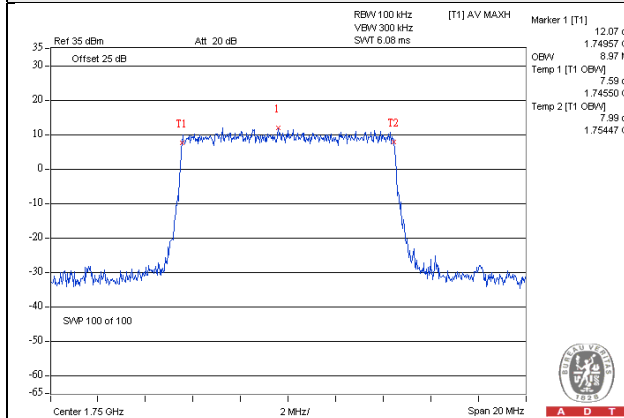
## 16QAM



## Occupied Bandwidth

## QPSK

## 16QAM



## Channel Bandwidth: 15MHz

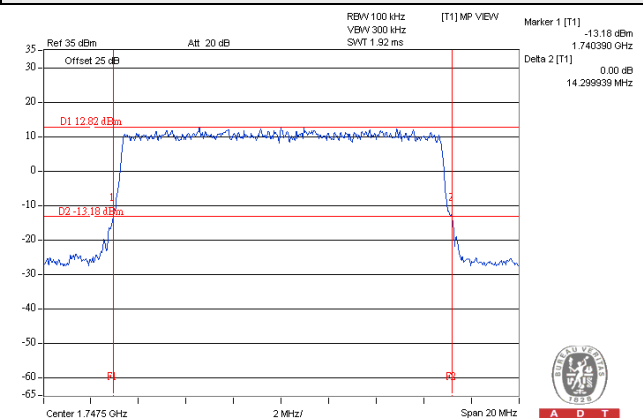
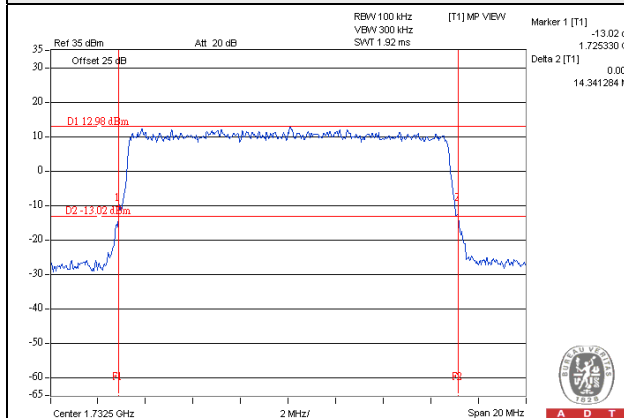
| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 20025   | 1717.5          | 14.25                  | 14.22 | 13.37                    | 13.37 |
| 20175   | 1732.5          | 14.34                  | 14.24 | 13.37                    | 13.37 |
| 20325   | 1747.5          | 14.22                  | 14.30 | 13.40                    | 13.40 |

## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

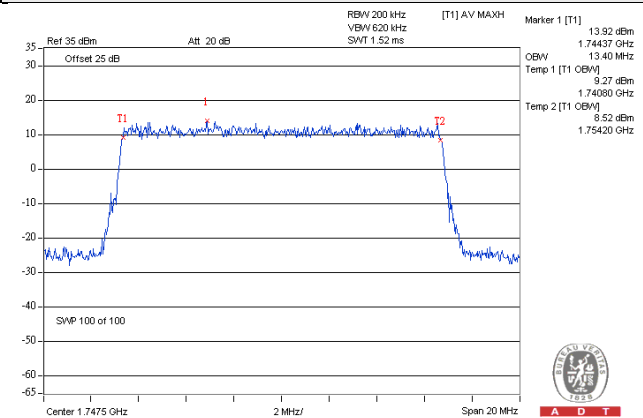
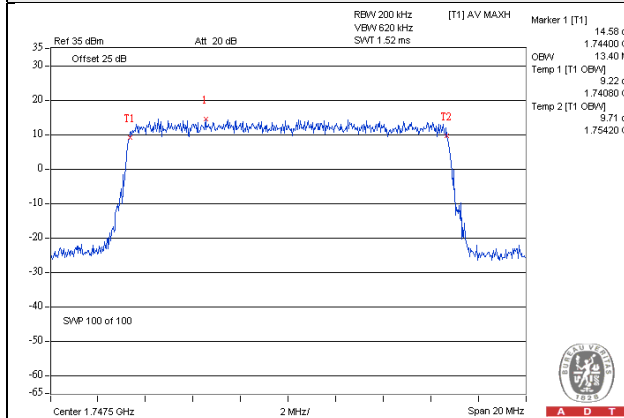
## 16QAM



## Occupied Bandwidth

## QPSK

## 16QAM



## Channel Bandwidth: 20MHz

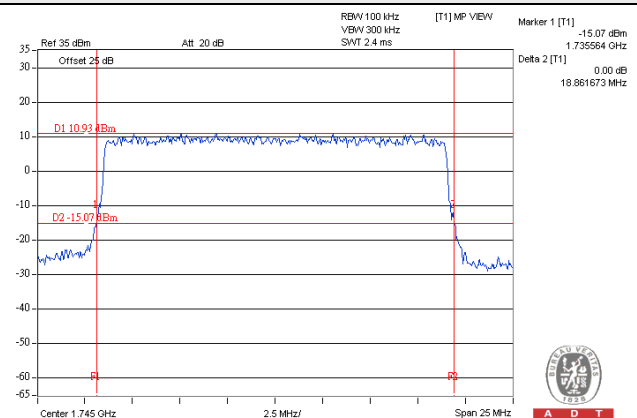
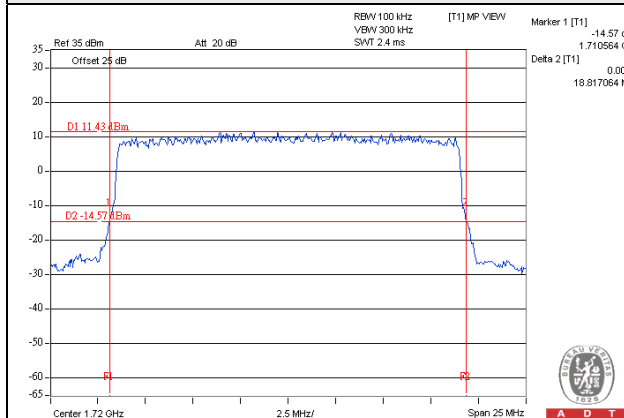
| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 20050   | 1720.0          | 18.82                  | 18.81 | 17.93                    | 17.93 |
| 20175   | 1732.5          | 18.79                  | 18.76 | 17.93                    | 17.93 |
| 20300   | 1745.0          | 18.77                  | 18.86 | 17.93                    | 17.93 |

## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

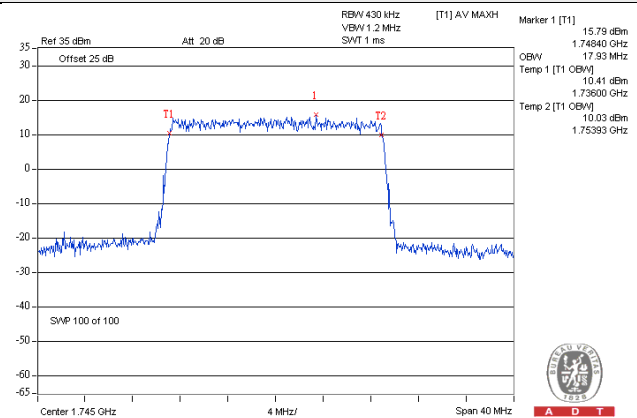
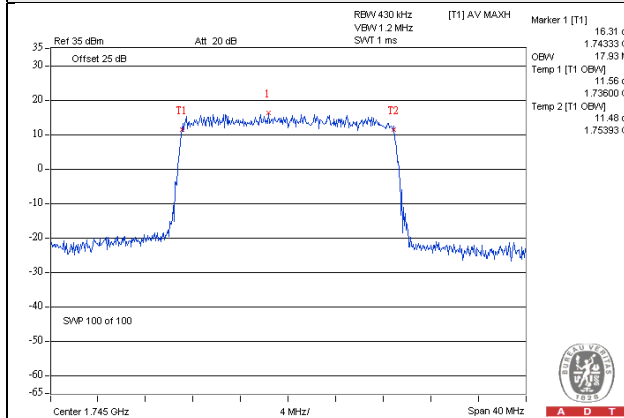
## 16QAM



## Occupied Bandwidth

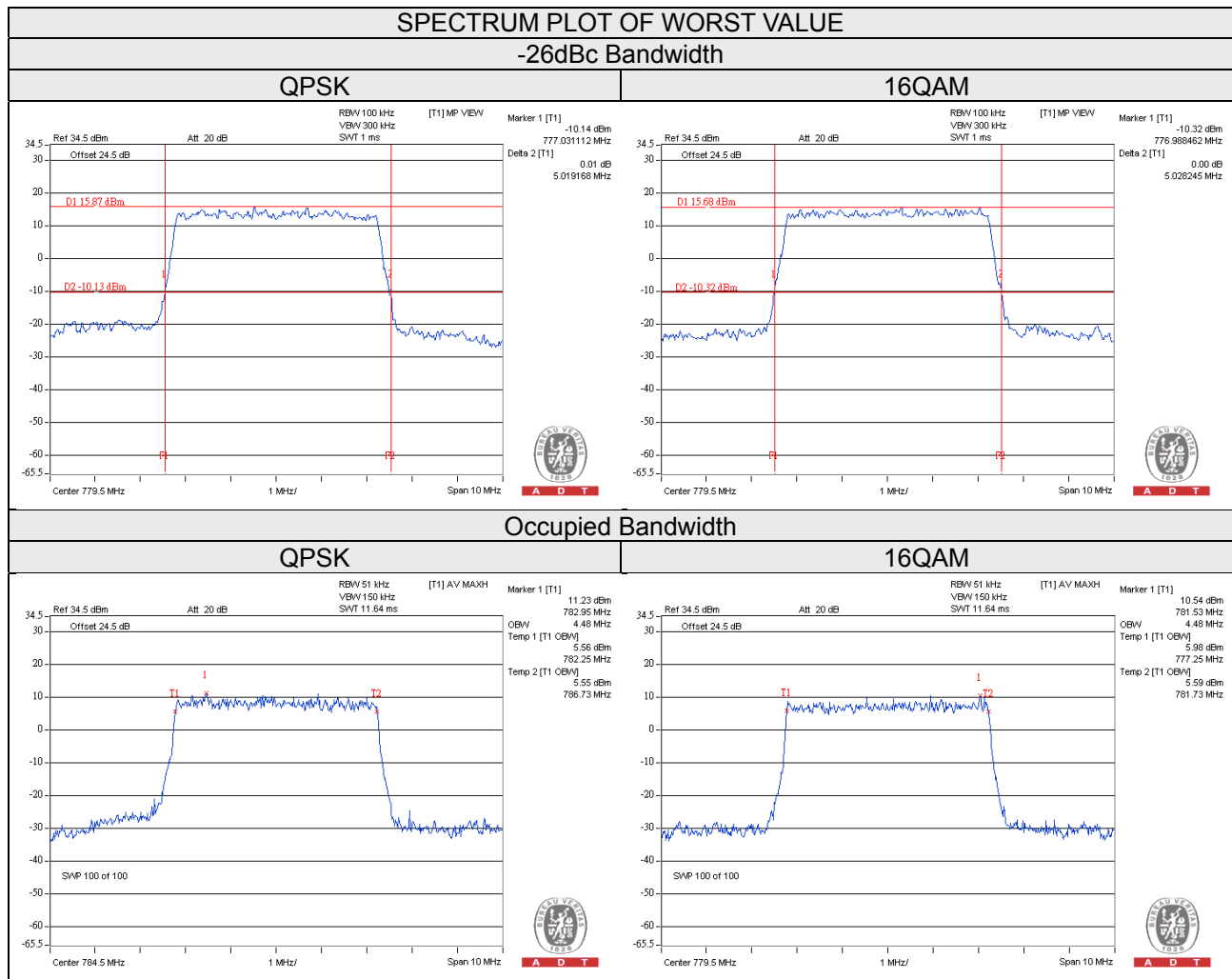
## QPSK

## 16QAM



# LTE Band 13

| Channel Bandwidth: 5MHz |                 |                        |       |                          |       |
|-------------------------|-----------------|------------------------|-------|--------------------------|-------|
| Channel                 | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|                         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 23205                   | 779.5           | 5.02                   | 5.03  | 4.47                     | 4.48  |
| 23230                   | 782.0           | 5.00                   | 5.02  | 4.47                     | 4.47  |
| 23255                   | 784.5           | 4.90                   | 5.02  | 4.48                     | 4.47  |



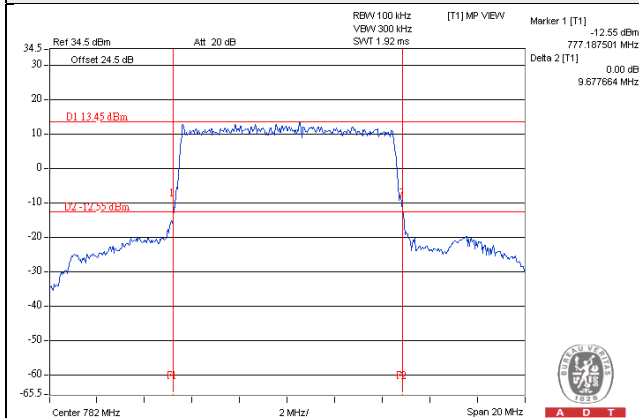
## Channel Bandwidth: 10MHz

| Channel | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------|-------|--------------------------|-------|
|         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 23230   | 782.0           | 9.68                   | 9.68  | 8.93                     | 8.93  |

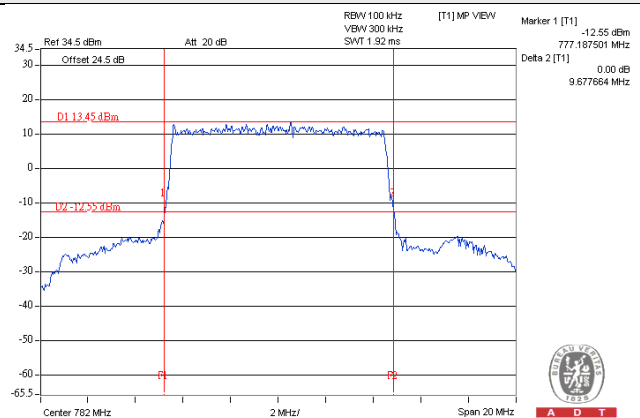
## SPECTRUM PLOT OF WORST VALUE

## -26dBc Bandwidth

## QPSK

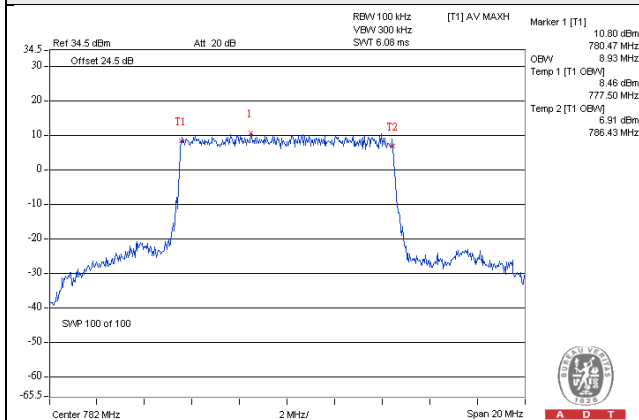


## 16QAM

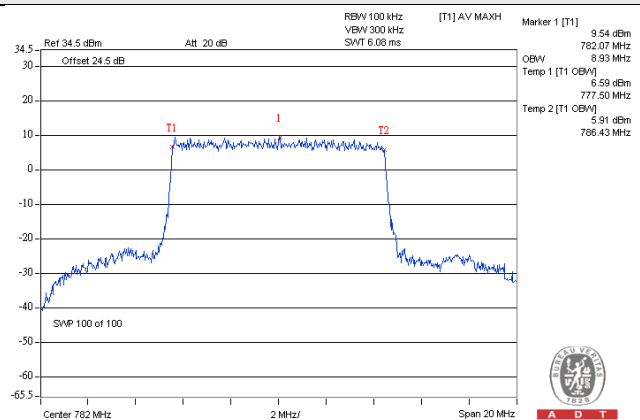


## Occupied Bandwidth

## QPSK



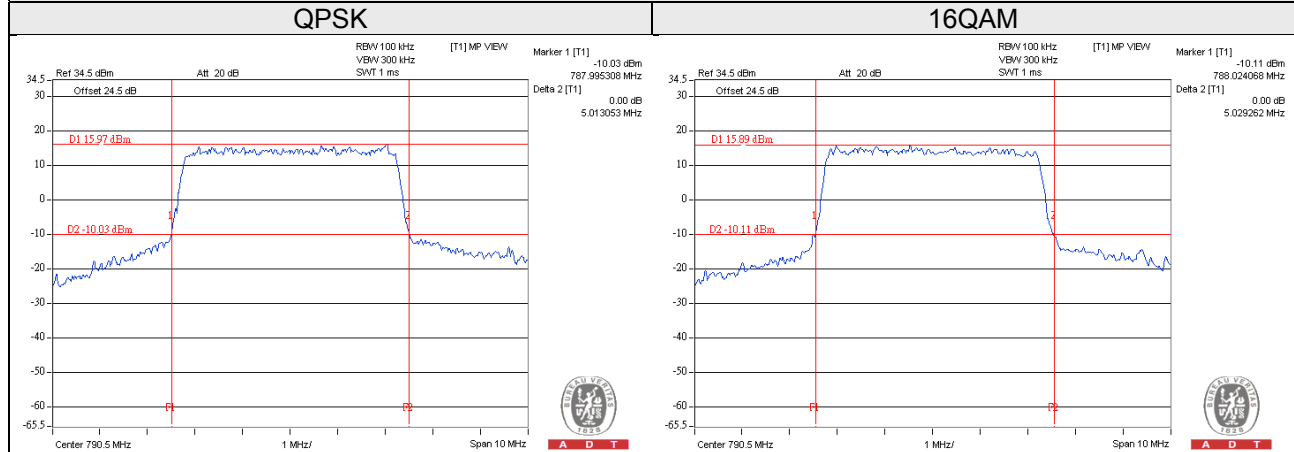
## 16QAM



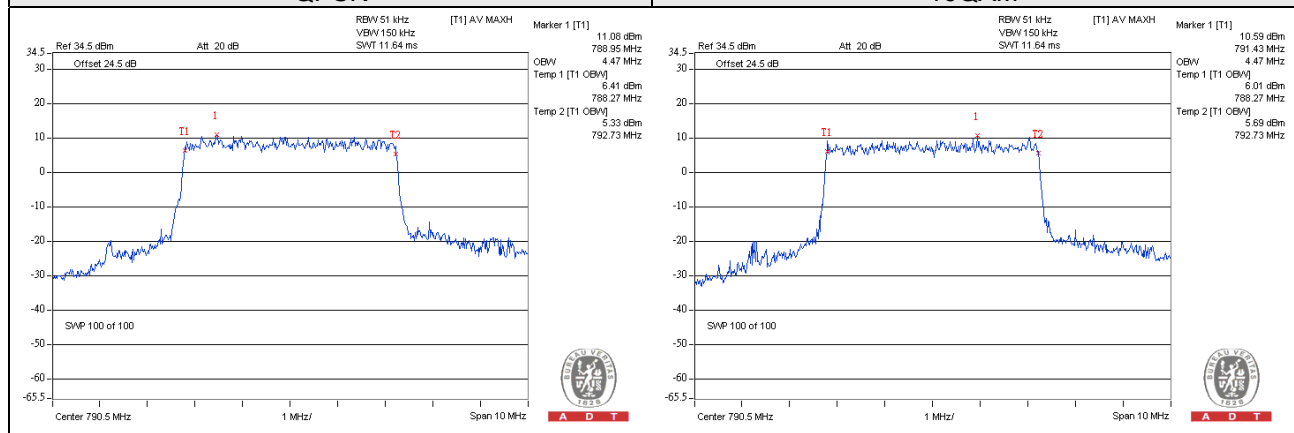
# LTE Band 14

| Channel Bandwidth: 5MHz |                 |                        |       |                          |       |
|-------------------------|-----------------|------------------------|-------|--------------------------|-------|
| Channel                 | Frequency (MHz) | -26dBc Bandwidth (MHz) |       | Occupied Bandwidth (MHz) |       |
|                         |                 | QPSK                   | 16QAM | QPSK                     | 16QAM |
| 23305                   | 790.5           | 5.01                   | 5.03  | 4.47                     | 4.47  |

## SPECTRUM PLOT OF WORST VALUE -26dBc Bandwidth



## Occupied Bandwidth

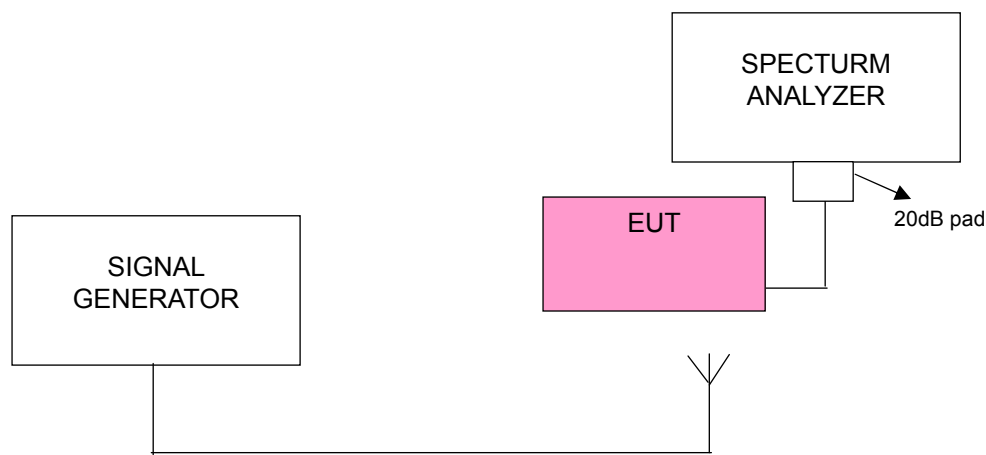


#### 4.4 Channel Edge Measurement

##### 4.4.1 Limits of Band Edge Measurement

According to FCC 27.53(m)(4) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than  $43 + 10 \log (P)$  dB at the channel edge, the limit of emission equal to  $-13\text{dBm}$ . And  $55 + 10 \log (P)$  dB at 5.5 MHz from the channel edges, the limit of emission equal to  $-25\text{dBm}$ . In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

##### 4.4.2 Test Setup

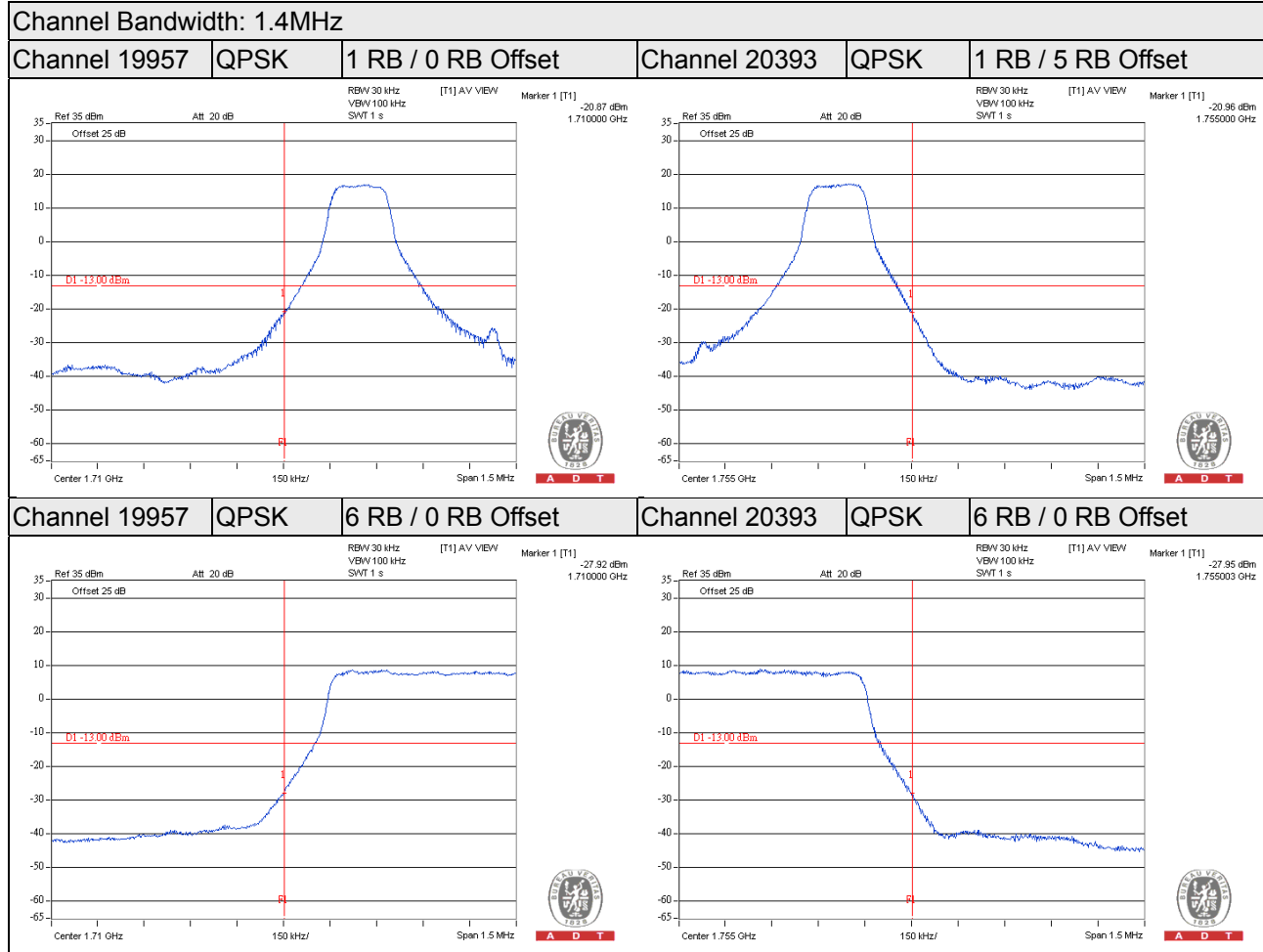


##### 4.4.3 Test Procedures

- The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RBW = 30kHz and VBW = 100kHz (Channel Bandwidth: 1.4MHz), RBW = 51kHz and VBW = 150kHz (Channel Bandwidth: 3MHz and 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz), RBW = 200kHz and VBW = 620kHz (Channel Bandwidth: 15MHz) and RBW = 430kHz and VBW = 1.2MHz (Channel Bandwidth: 20MHz).
- Record the max trace plot into the test report.

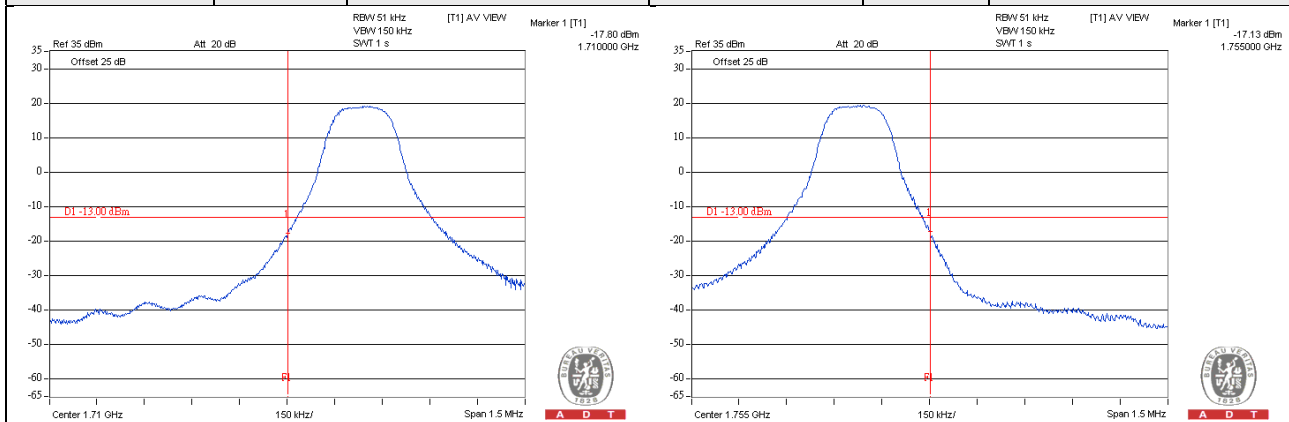
#### 4.4.4 Test Results

##### LTE Band 4

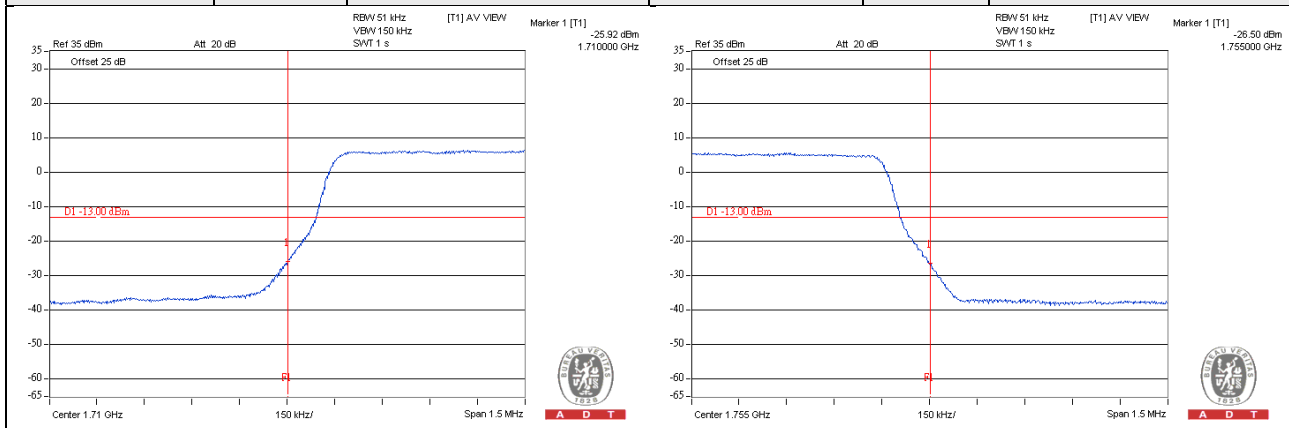


# Channel Bandwidth: 3MHz

|               |      |                    |               |      |                     |
|---------------|------|--------------------|---------------|------|---------------------|
| Channel 19965 | QPSK | 1 RB / 0 RB Offset | Channel 20385 | QPSK | 1 RB / 14 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|

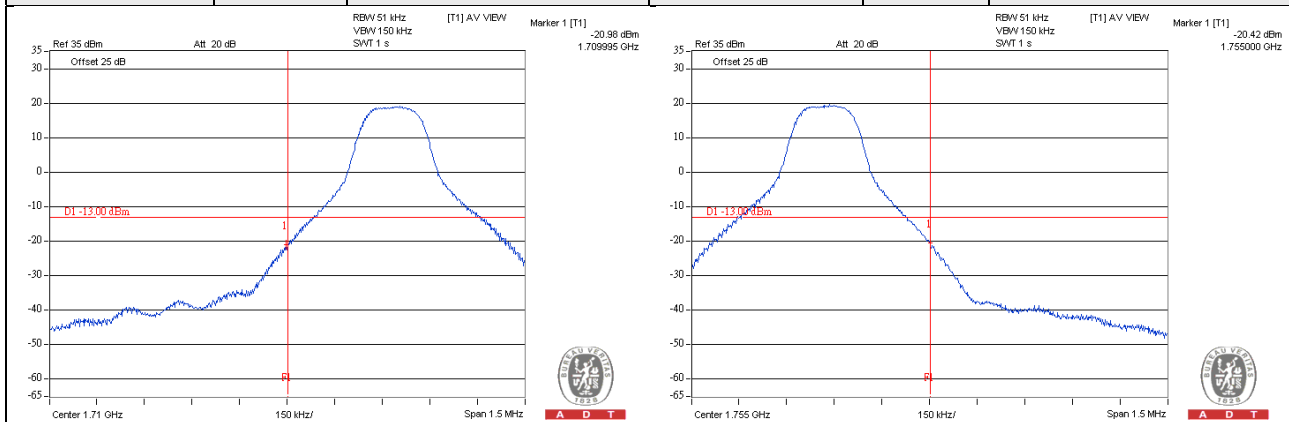


|               |      |                     |               |      |                     |
|---------------|------|---------------------|---------------|------|---------------------|
| Channel 19965 | QPSK | 15 RB / 0 RB Offset | Channel 20385 | QPSK | 15 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|

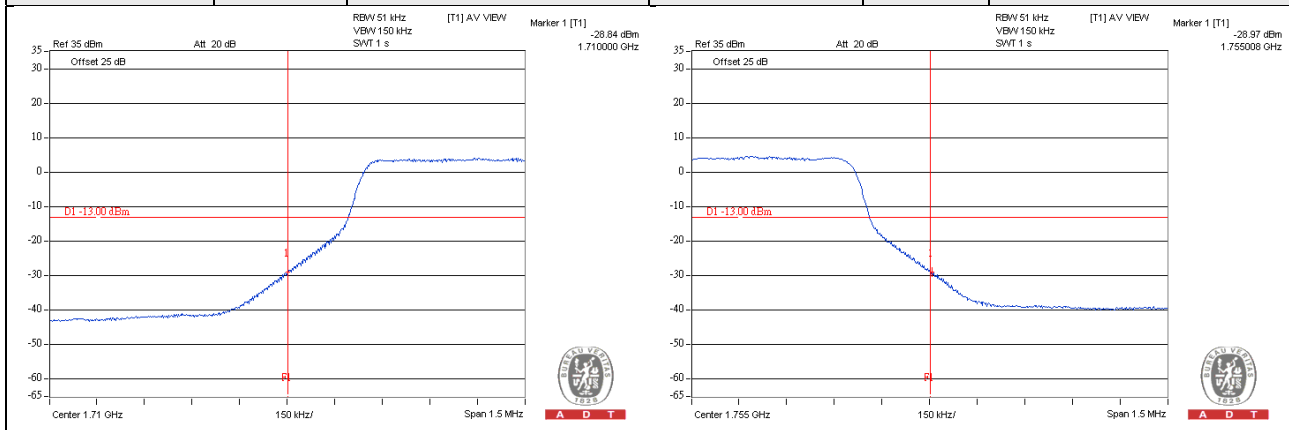


## Channel Bandwidth: 5 MHz

|               |      |                    |               |      |                     |
|---------------|------|--------------------|---------------|------|---------------------|
| Channel 19975 | QPSK | 1 RB / 0 RB Offset | Channel 20375 | QPSK | 1 RB / 24 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|

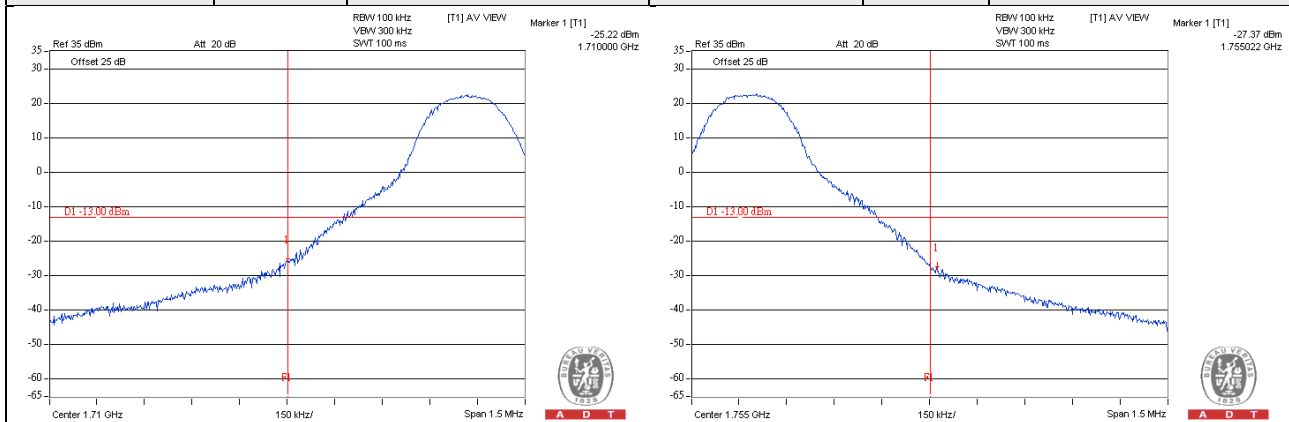


|               |      |                     |               |      |                     |
|---------------|------|---------------------|---------------|------|---------------------|
| Channel 19975 | QPSK | 25 RB / 0 RB Offset | Channel 20375 | QPSK | 25 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|

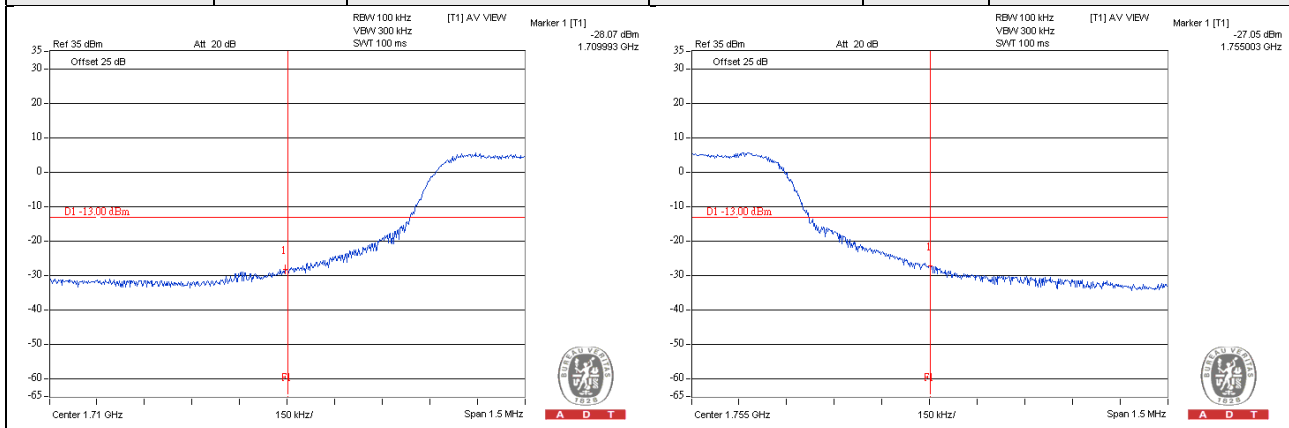


# Channel Bandwidth: 10MHz

|               |      |                    |               |      |                     |
|---------------|------|--------------------|---------------|------|---------------------|
| Channel 20000 | QPSK | 1 RB / 0 RB Offset | Channel 20350 | QPSK | 1 RB / 49 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|

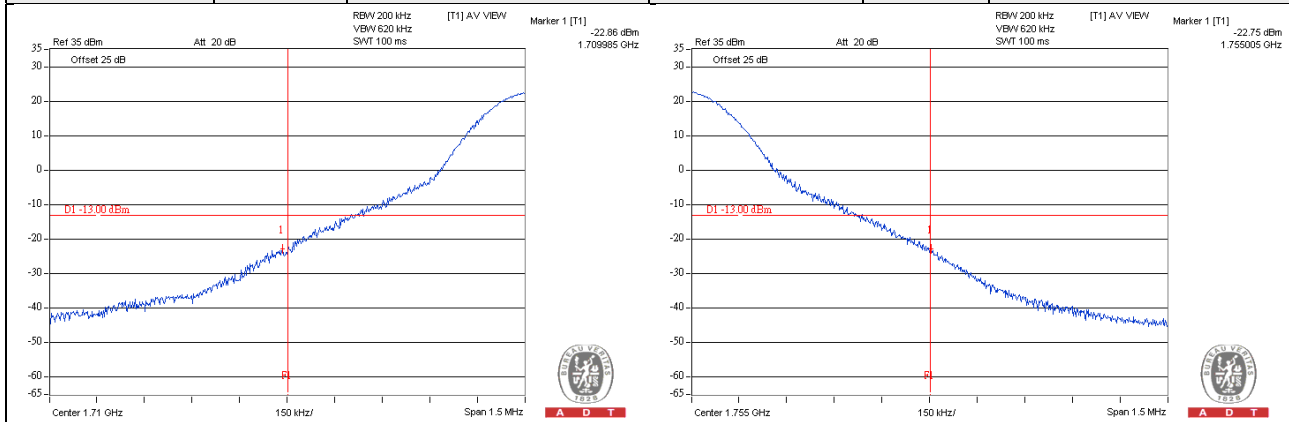


|               |      |                     |               |      |                     |
|---------------|------|---------------------|---------------|------|---------------------|
| Channel 20000 | QPSK | 50 RB / 0 RB Offset | Channel 20350 | QPSK | 50 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|

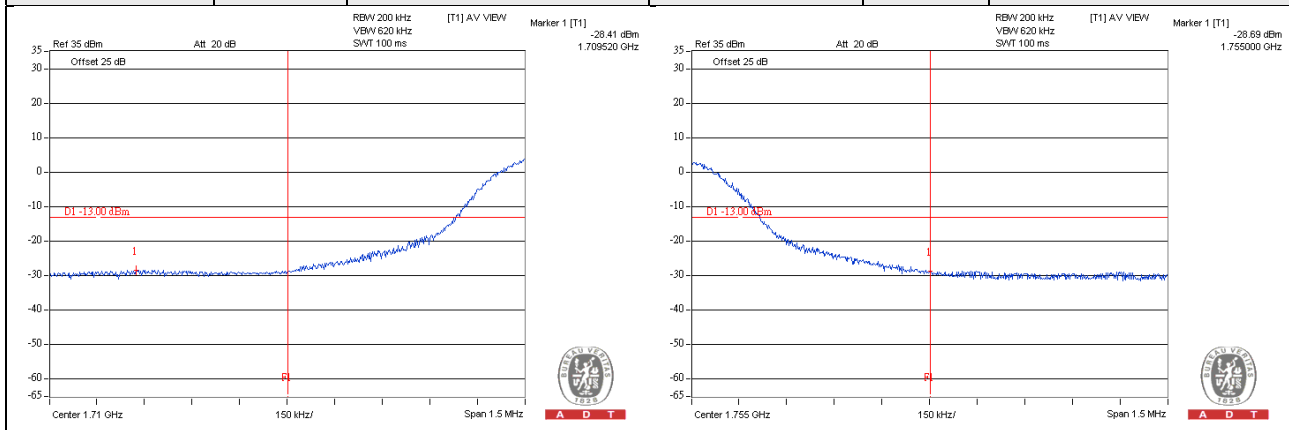


# Channel Bandwidth: 15MHz

| Channel 20025 | QPSK | 1 RB / 0 RB Offset | Channel 20325 | QPSK | 1 RB / 74 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|
|---------------|------|--------------------|---------------|------|---------------------|

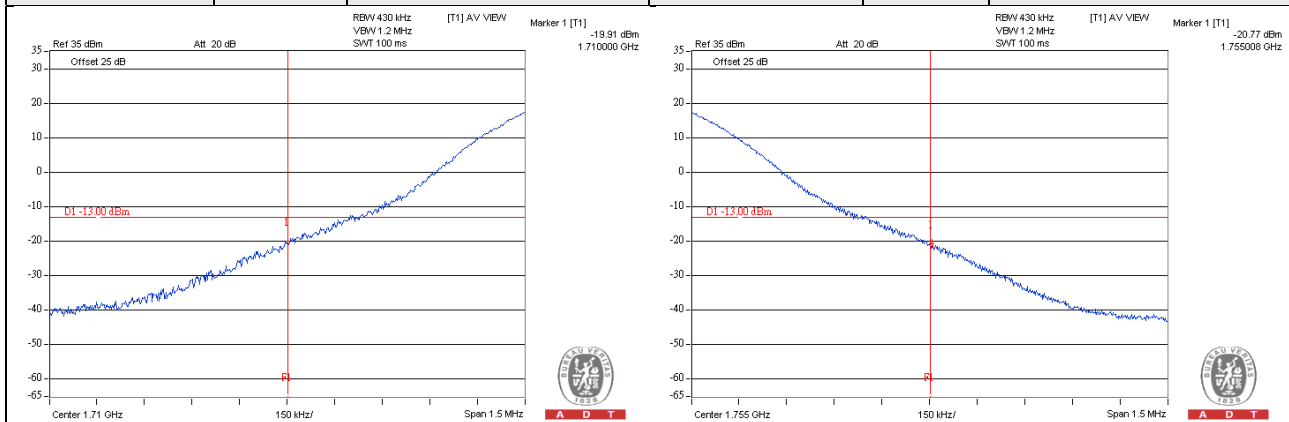


| Channel 20025 | QPSK | 75 RB / 0 RB Offset | Channel 20325 | QPSK | 75 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|
|---------------|------|---------------------|---------------|------|---------------------|

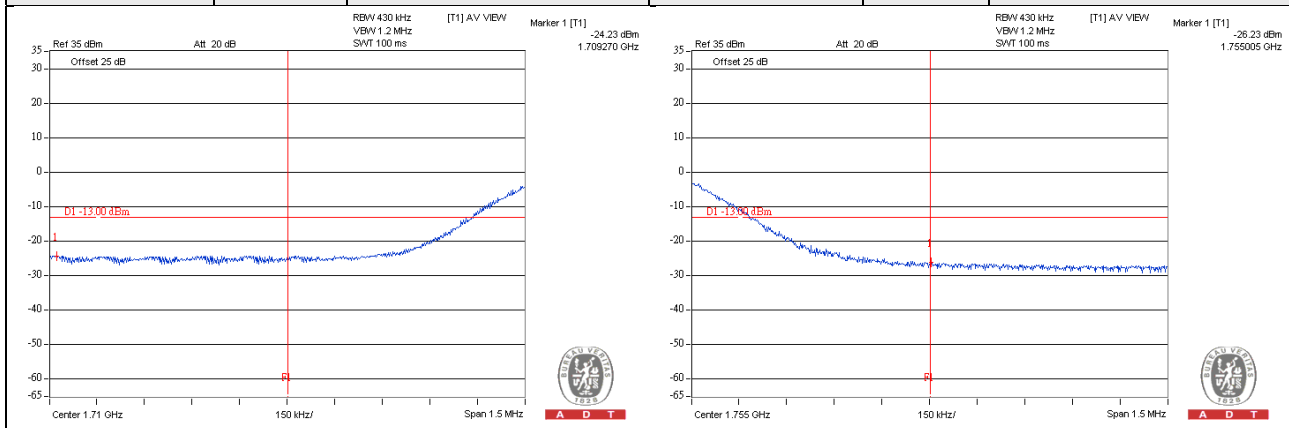


# Channel Bandwidth: 20MHz

|               |      |                    |               |      |                     |
|---------------|------|--------------------|---------------|------|---------------------|
| Channel 20050 | QPSK | 1 RB / 0 RB Offset | Channel 20300 | QPSK | 1 RB / 99 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|



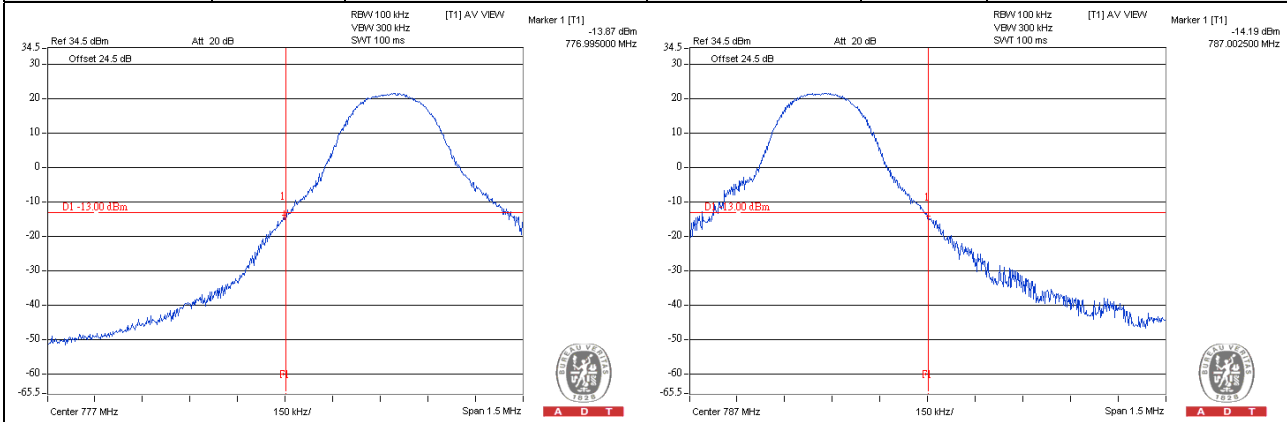
|               |      |                      |               |      |                      |
|---------------|------|----------------------|---------------|------|----------------------|
| Channel 20050 | QPSK | 100 RB / 0 RB Offset | Channel 20300 | QPSK | 100 RB / 0 RB Offset |
|---------------|------|----------------------|---------------|------|----------------------|



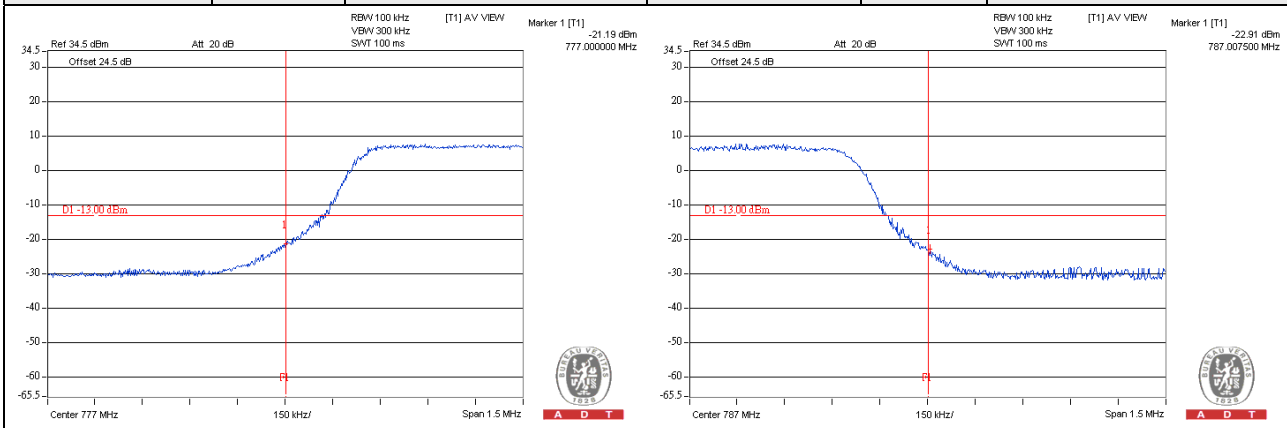
# LTE Band 13

Channel Bandwidth: 5MHz

| Channel 23205 | QPSK | 1 RB / 0 RB Offset | Channel 23255 | QPSK | 1 RB / 24 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|
|---------------|------|--------------------|---------------|------|---------------------|

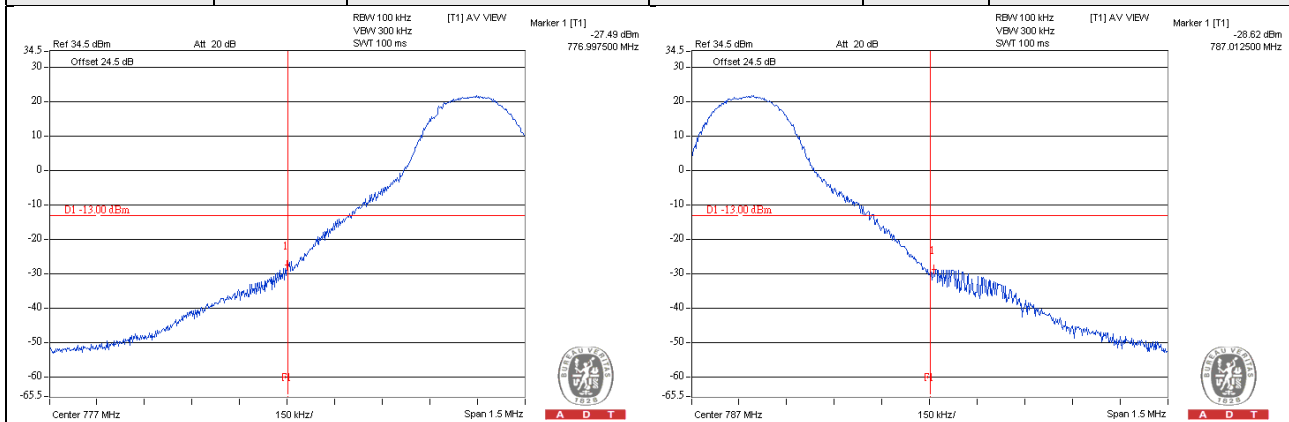


| Channel 23205 | QPSK | 25 RB / 0 RB Offset | Channel 23255 | QPSK | 25 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|
|---------------|------|---------------------|---------------|------|---------------------|

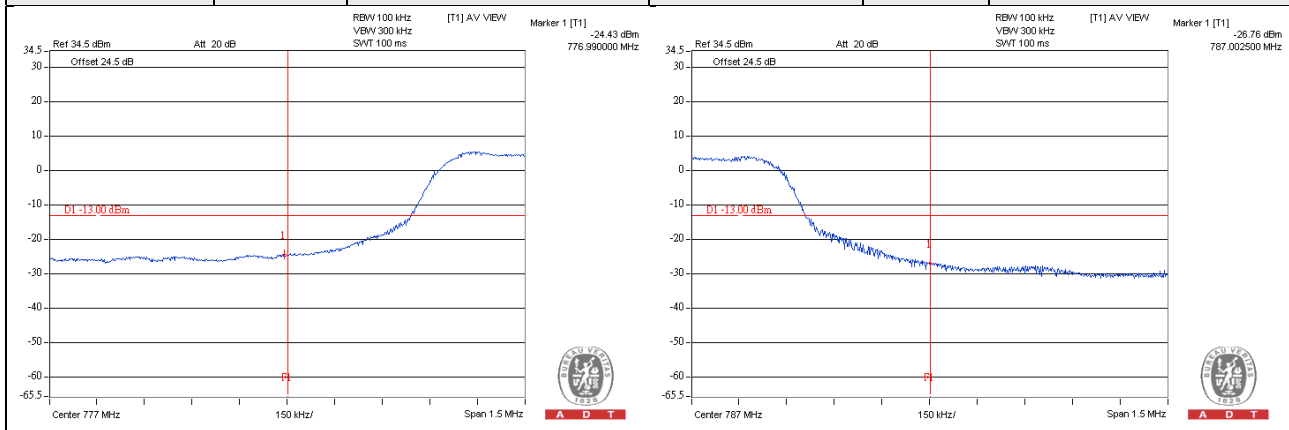


# Channel Bandwidth: 10MHz

|               |      |                    |               |      |                     |
|---------------|------|--------------------|---------------|------|---------------------|
| Channel 23230 | QPSK | 1 RB / 0 RB Offset | Channel 23230 | QPSK | 1 RB / 49 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|



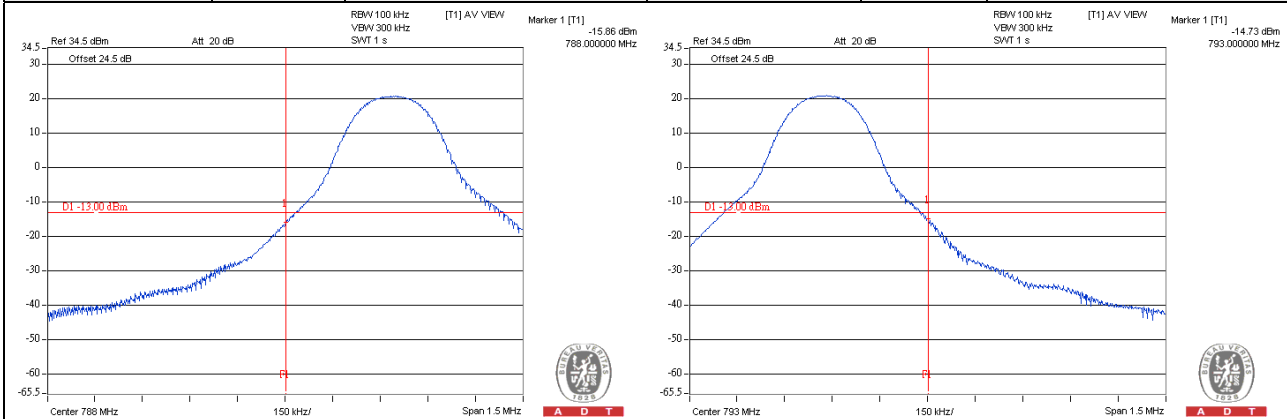
|               |      |                     |               |      |                     |
|---------------|------|---------------------|---------------|------|---------------------|
| Channel 23230 | QPSK | 50 RB / 0 RB Offset | Channel 23230 | QPSK | 50 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|



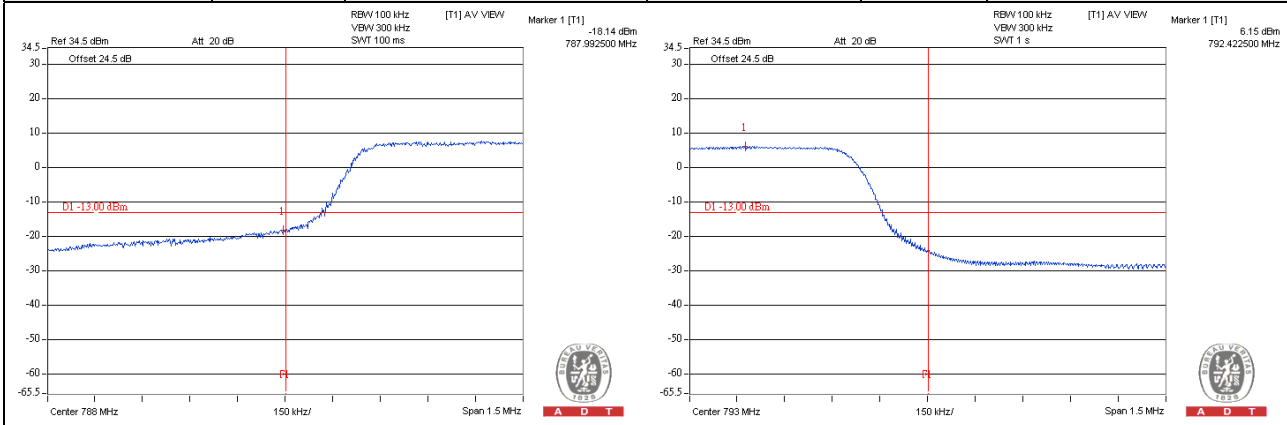
# LTE Band 14

Channel Bandwidth: 5MHz

| Channel 23305 | QPSK | 1 RB / 0 RB Offset | Channel 23305 | QPSK | 1 RB / 24 RB Offset |
|---------------|------|--------------------|---------------|------|---------------------|
|---------------|------|--------------------|---------------|------|---------------------|



| Channel 23305 | QPSK | 25 RB / 0 RB Offset | Channel 23305 | QPSK | 25 RB / 0 RB Offset |
|---------------|------|---------------------|---------------|------|---------------------|
|---------------|------|---------------------|---------------|------|---------------------|

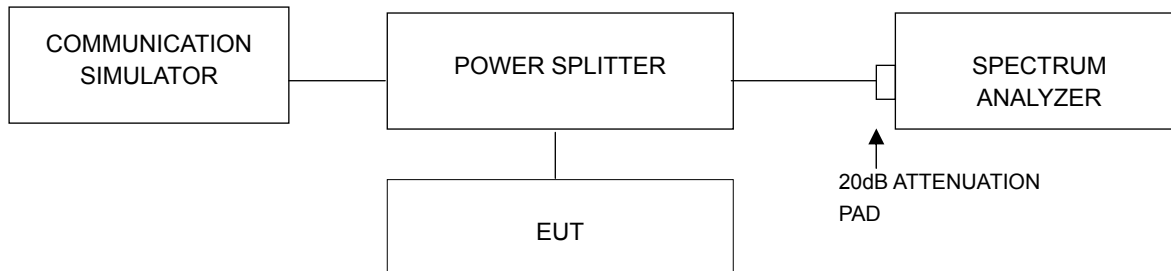


## 4.5 Peak to Average Ratio

### 4.5.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.5.2 Test Setup



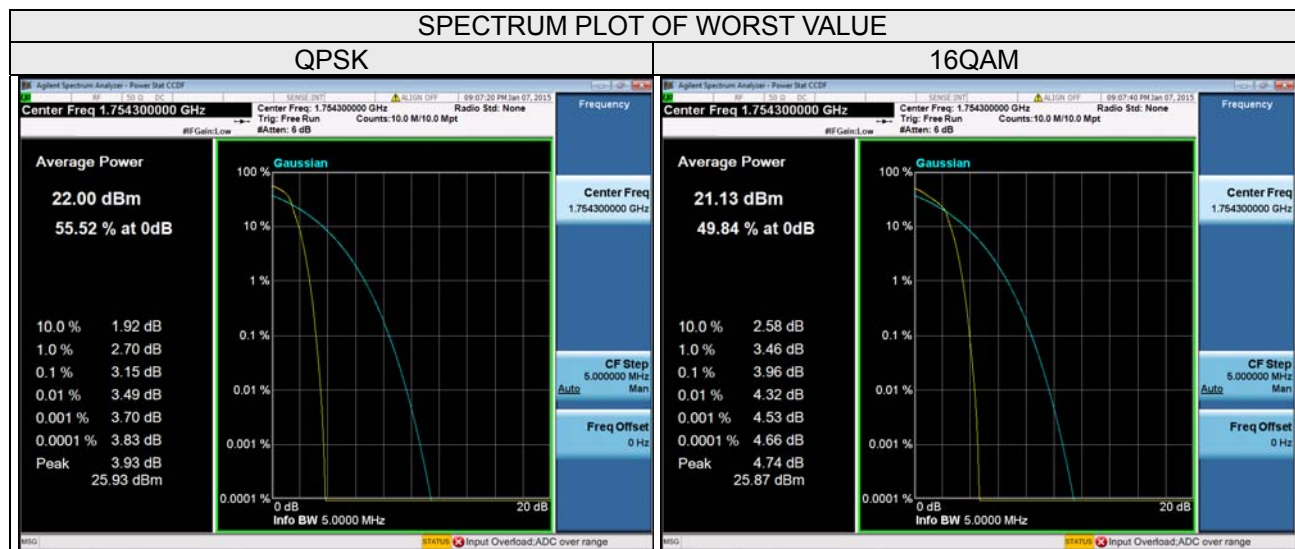
### 4.5.3 Test Procedures

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

#### 4.5.4 Test Results

##### LTE Band 4

| Channel Bandwidth: 1.4MHz |                 |                            |       |
|---------------------------|-----------------|----------------------------|-------|
| Channel                   | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                           |                 | QPSK                       | 16QAM |
| 19957                     | 1710.7          | 3.03                       | 3.73  |
| 20175                     | 1732.5          | 3.06                       | 3.77  |
| 20393                     | 1754.3          | 3.15                       | 3.96  |



## Channel Bandwidth: 3MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 19965   | 1711.5          | 2.40                       | 3.06  |
| 20175   | 1732.5          | 2.42                       | 3.13  |
| 20385   | 1753.5          | 2.47                       | 3.24  |

## SPECTRUM PLOT OF WORST VALUE

## QPSK



## 16QAM



Channel Bandwidth: 5MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 19975   | 1712.5          | 2.31                       | 3.00  |
| 20175   | 1732.5          | 2.32                       | 3.05  |
| 20375   | 1752.5          | 2.44                       | 3.16  |

## SPECTRUM PLOT OF WORST VALUE

QPSK

16QAM



## Channel Bandwidth: 10MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 20000   | 1715.0          | 3.51                       | 4.01  |
| 20175   | 1732.5          | 3.51                       | 3.99  |
| 20350   | 1750.0          | 3.53                       | 4.04  |

## SPECTRUM PLOT OF WORST VALUE



Channel Bandwidth: 15MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 20025   | 1717.5          | 3.80                       | 3.26  |
| 20175   | 1732.5          | 3.77                       | 3.28  |
| 20325   | 1747.5          | 3.80                       | 3.29  |

## SPECTRUM PLOT OF WORST VALUE



## Channel Bandwidth: 20MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 20050   | 1720.0          | 3.52                       | 4.01  |
| 20175   | 1732.5          | 2.77                       | 3.26  |
| 20300   | 1745.0          | 3.50                       | 4.01  |

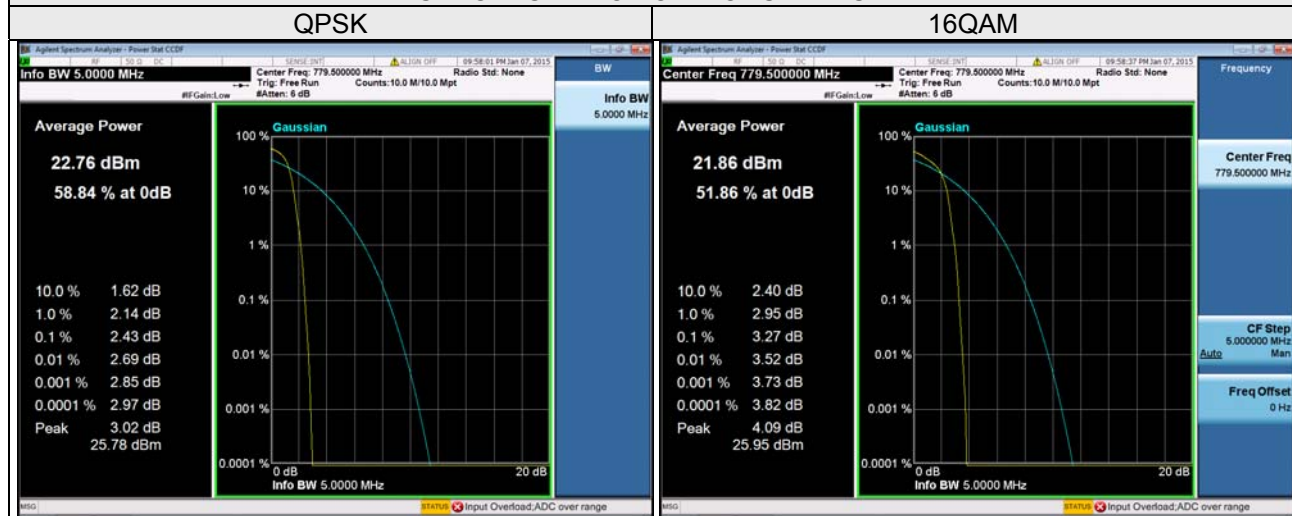
## SPECTRUM PLOT OF WORST VALUE



## LTE Band 13

| Channel Bandwidth: 5MHz |                 |                            |       |
|-------------------------|-----------------|----------------------------|-------|
| Channel                 | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                         |                 | QPSK                       | 16QAM |
| 23205                   | 779.5           | 2.43                       | 3.27  |
| 23230                   | 782.0           | 2.38                       | 3.27  |
| 23255                   | 784.5           | 2.22                       | 2.78  |

## SPECTRUM PLOT OF WORST VALUE



Channel Bandwidth: 10MHz

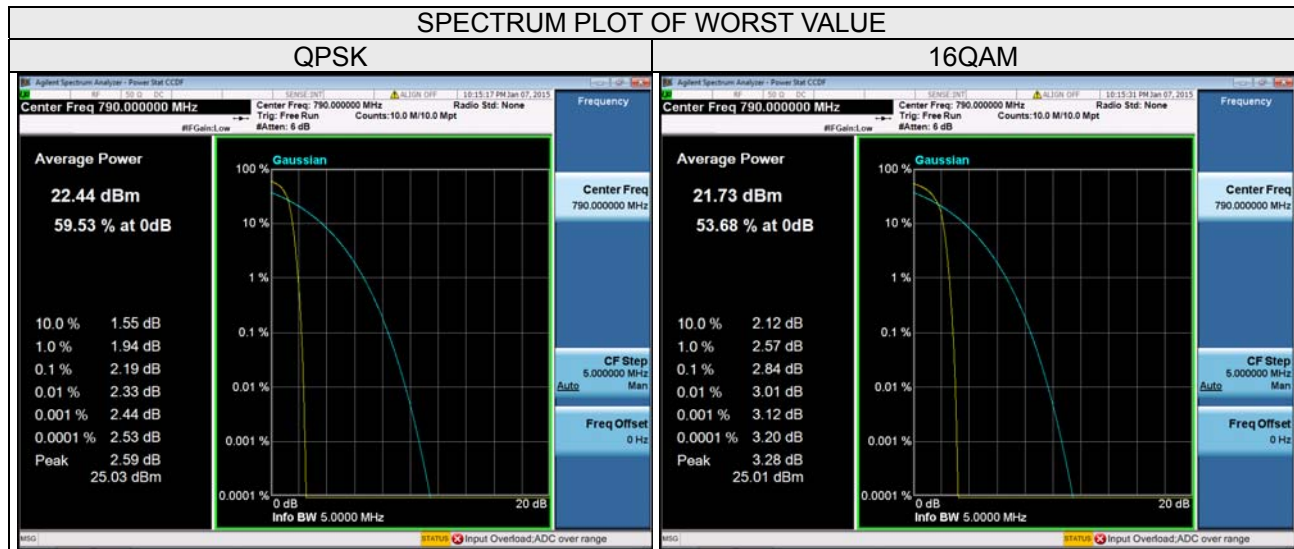
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|---------|-----------------|----------------------------|-------|
|         |                 | QPSK                       | 16QAM |
| 23230   | 782.0           | 3.54                       | 4.10  |

## SPECTRUM PLOT OF WORST VALUE



# LTE Band 14

| Channel Bandwidth: 5MHz |                 |                            |       |
|-------------------------|-----------------|----------------------------|-------|
| Channel                 | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                         |                 | QPSK                       | 16QAM |
| 23305                   | 790.5           | 2.19                       | 2.84  |



## 4.6 Conducted Spurious Emissions

### 4.6.1 Limits of Conducted Spurious Emissions Measurement

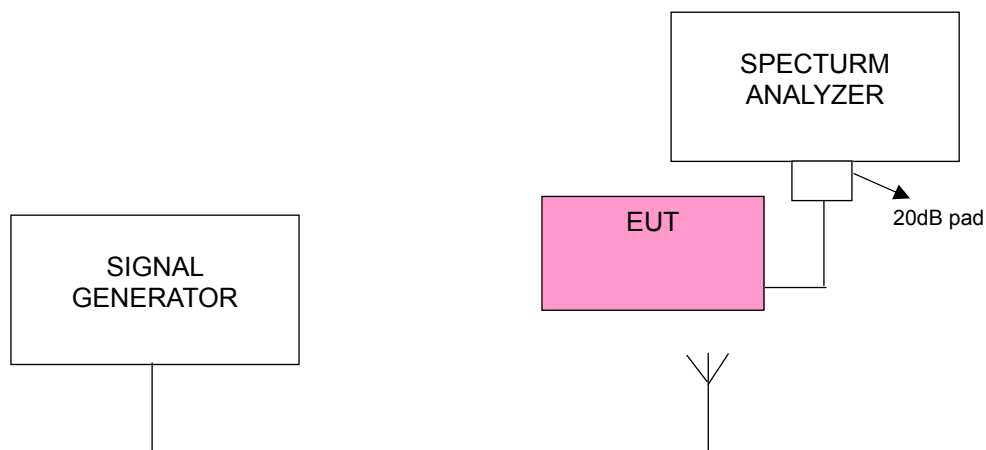
In the FCC 27.53,

For LTE band 13 and 14 operations in the 746-758MHz band and the 776-788 MHz band should meet 27.53 (c) (1) (2)  $43+10\log (P)$ .

For LTE band 4 operations in the 1710 MHz to 1755 MHz band and the 2110 MHz to 2155 MHz band should meet 27.53 (h) (1) (2)  $43+10\log (P)$

The emission limit equal to  $-13\text{dBm}$ .

### 4.6.2 Test Setup



### 4.6.3 Test Procedure

- All measurements were done at 3 channels: low, middle and high operational frequency range.
- When the spectrum scanned from 9kHz to 20GHz, it shall be connected to the 20dB pad attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

### 4.6.4 Test Results

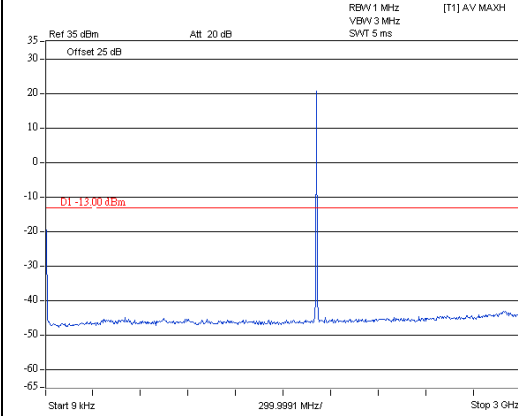
#### LTE Band 4

Channel Bandwidth: 1.4MHz

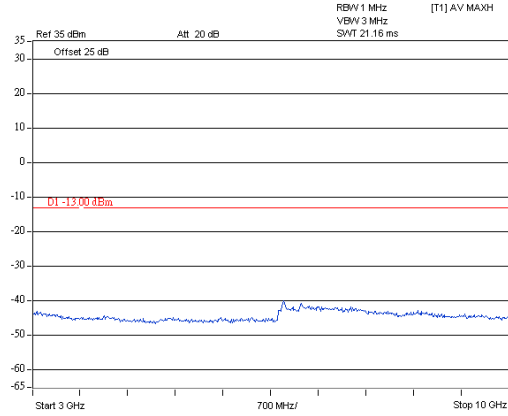
Channel 19957

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

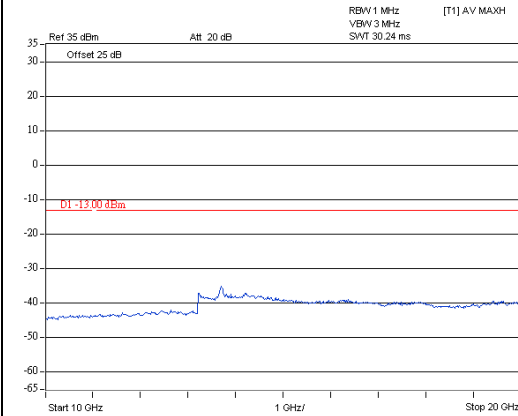


A D T



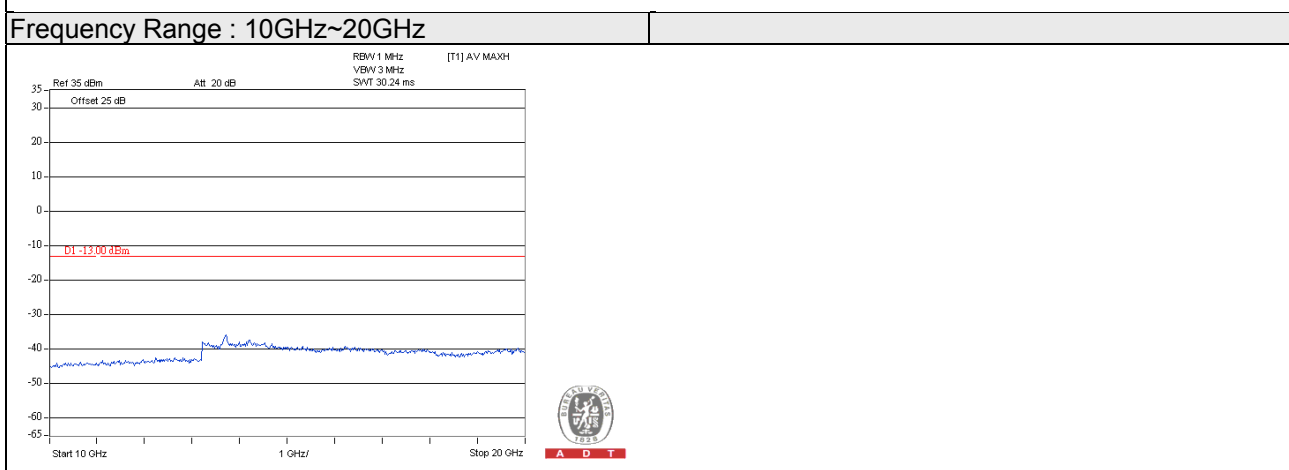
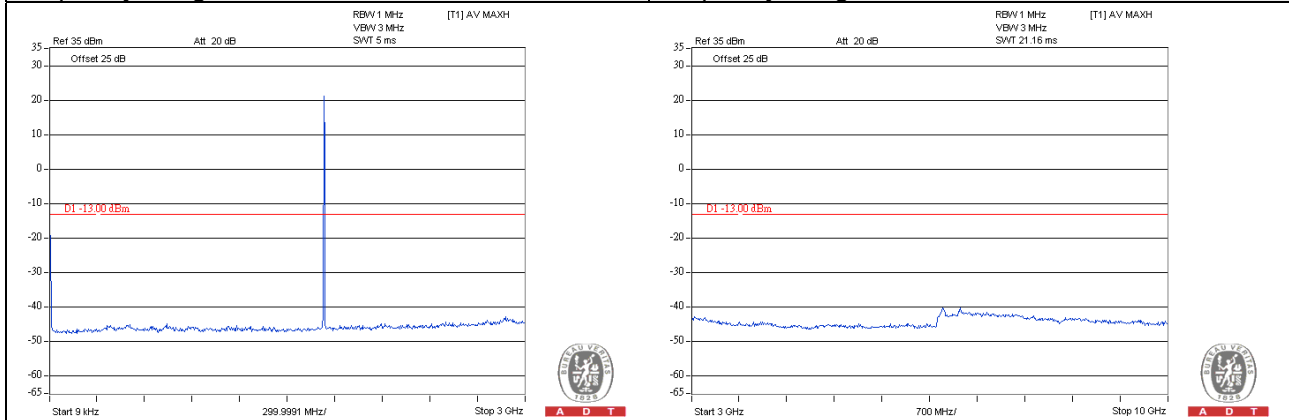
A D T

Frequency Range : 10GHz~20GHz

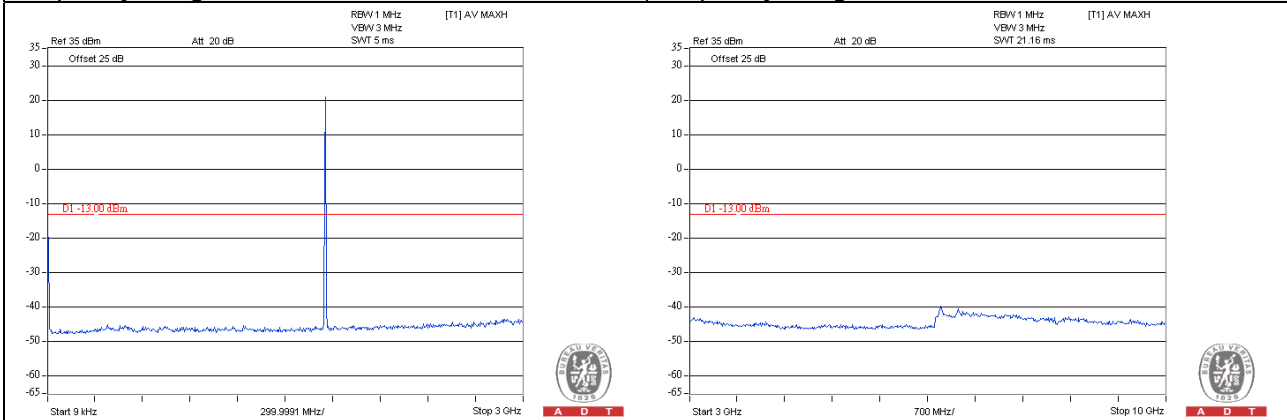


A D T

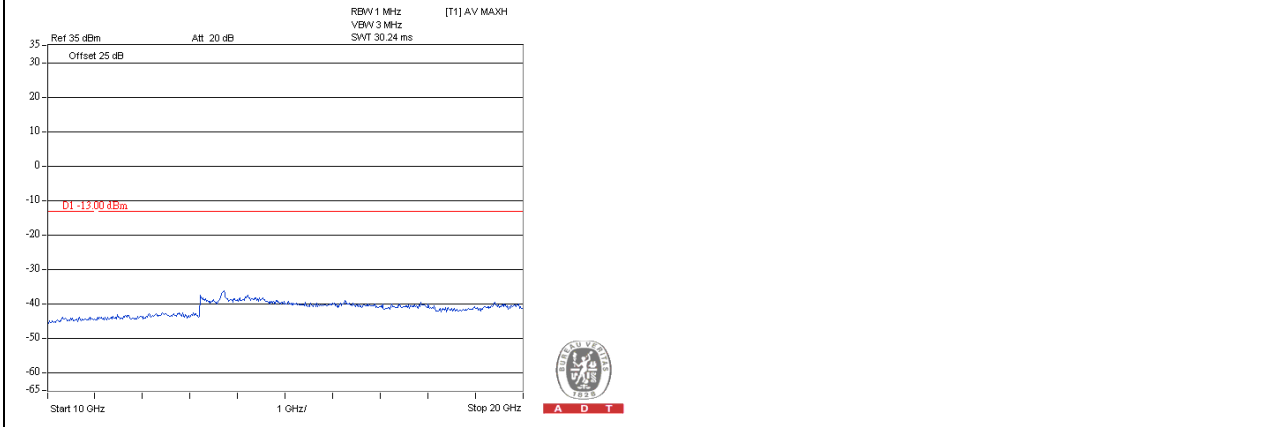
|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 1.4MHz   |                              |
| Channel 20175               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



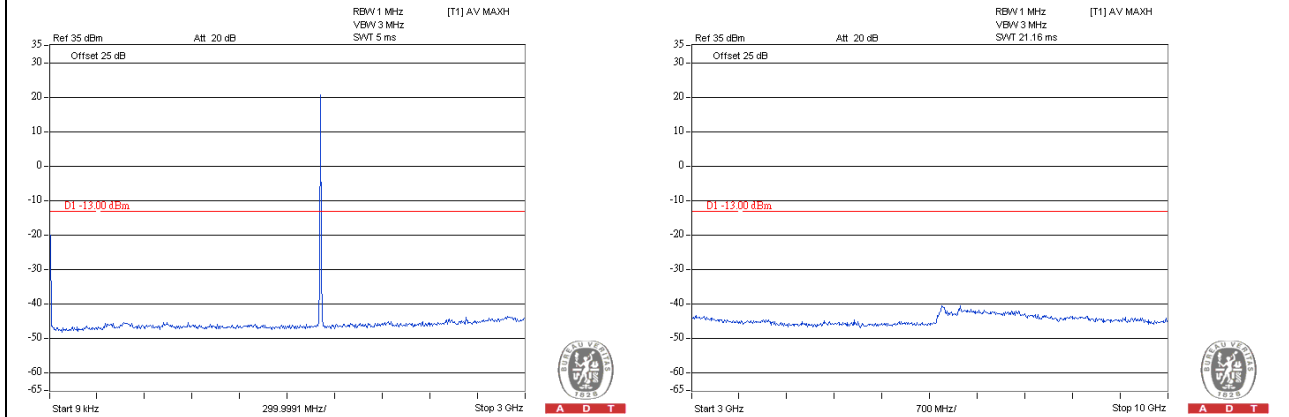
|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 1.4MHz   |                              |
| Channel 20393               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



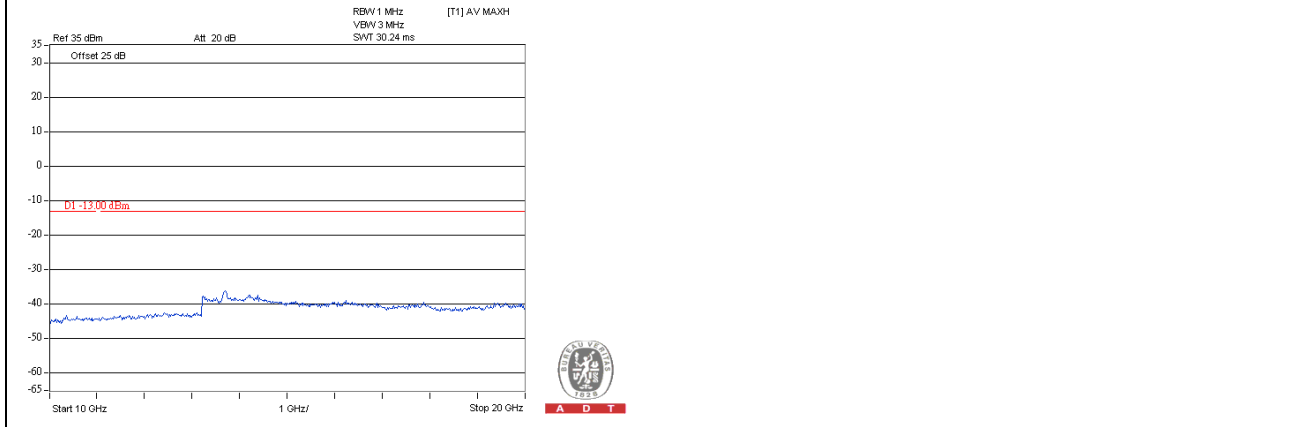
|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|



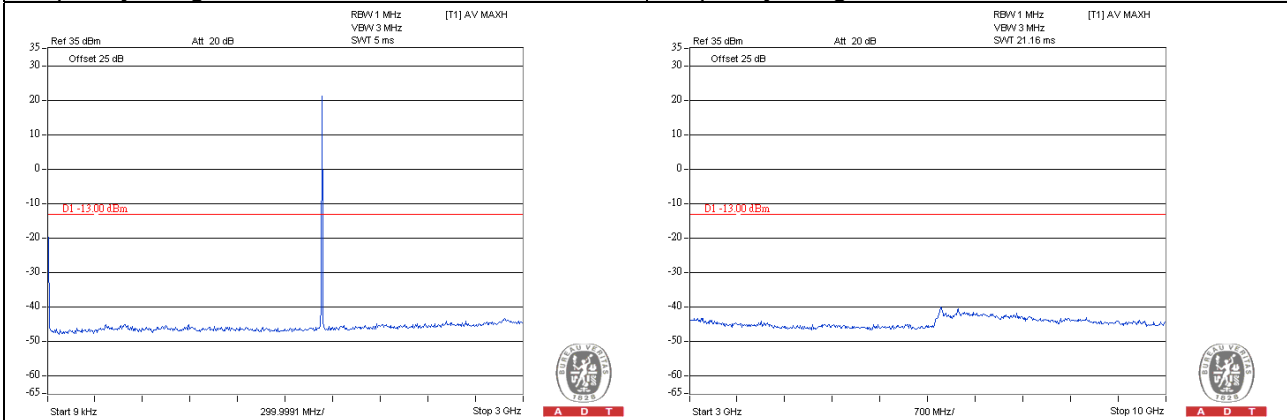
|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 3MHz     |                              |
| Channel 19965               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



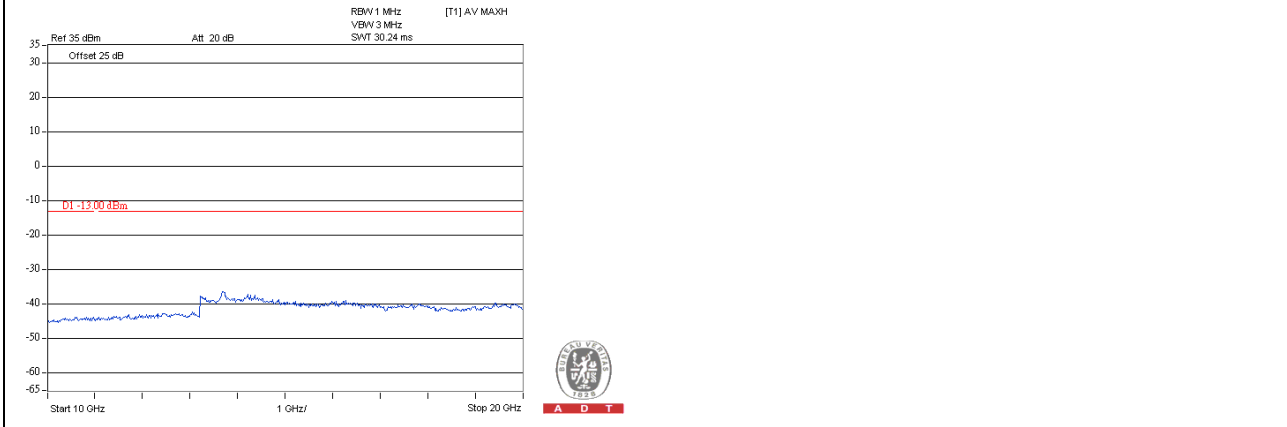
|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|



|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 3MHz     |                              |
| Channel 20175               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|

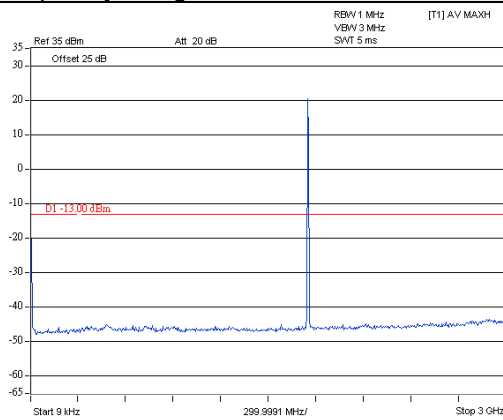


Channel Bandwidth: 3MHz

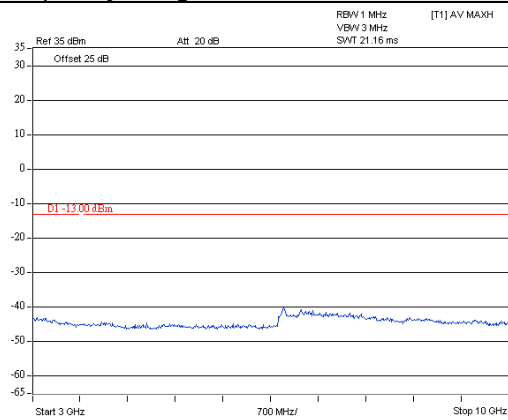
Channel 20385

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

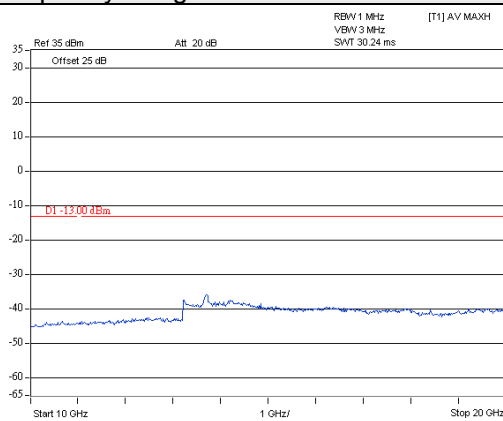


A D T



A D T

Frequency Range : 10GHz~20GHz



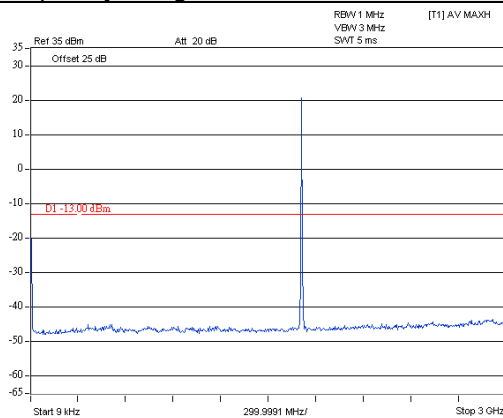
A D T

Channel Bandwidth: 5MHz

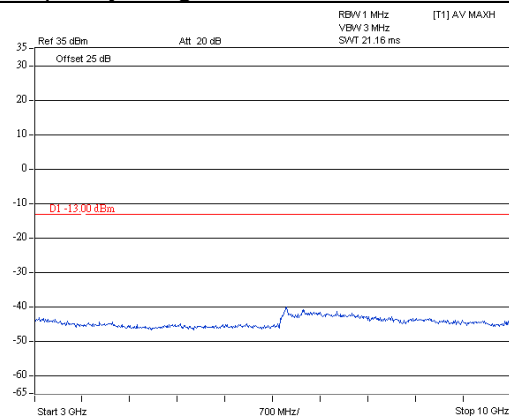
Channel 19975

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

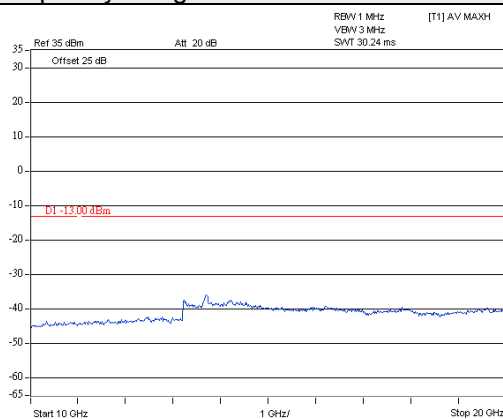


A D T



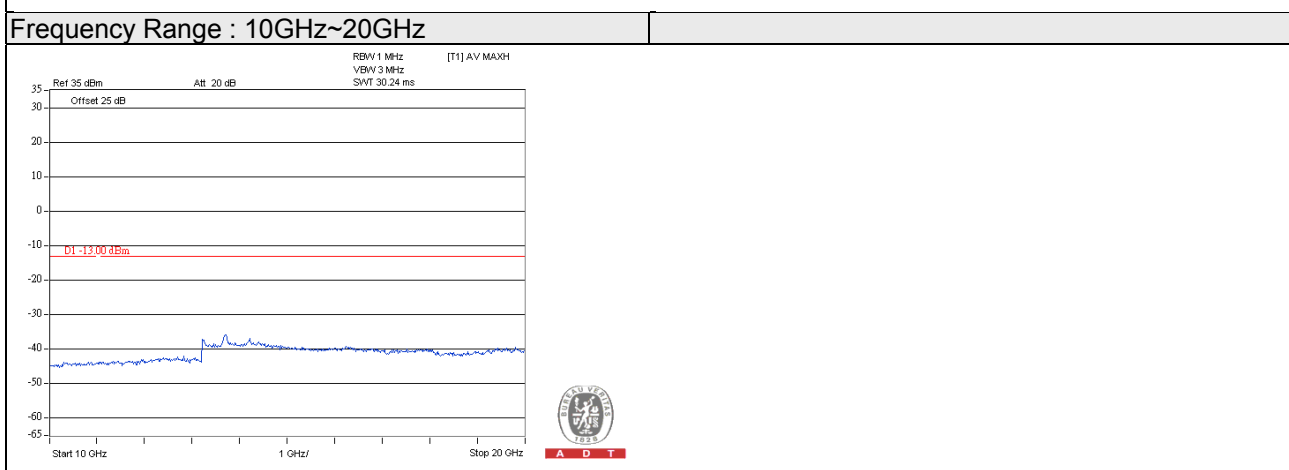
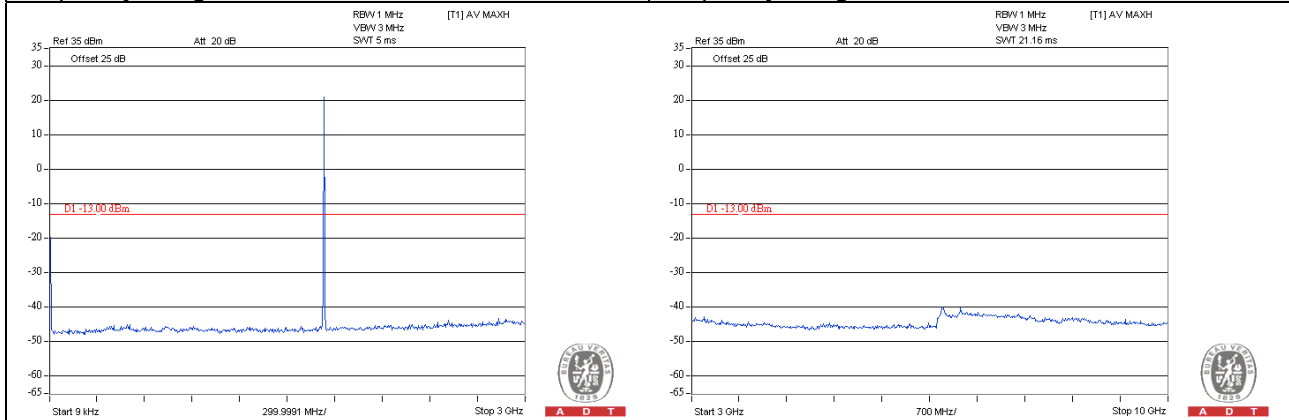
A D T

Frequency Range : 10GHz~20GHz

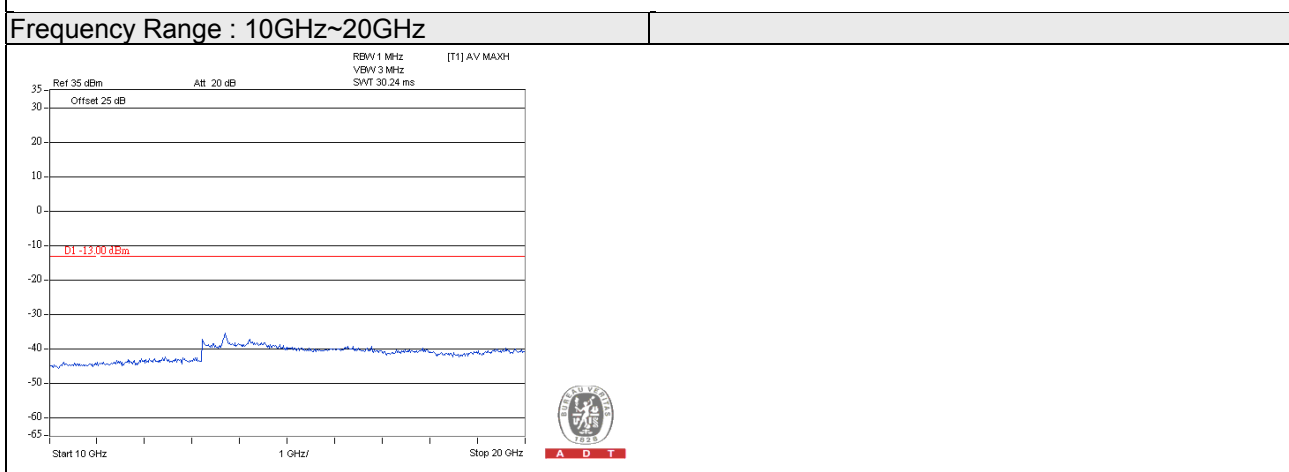
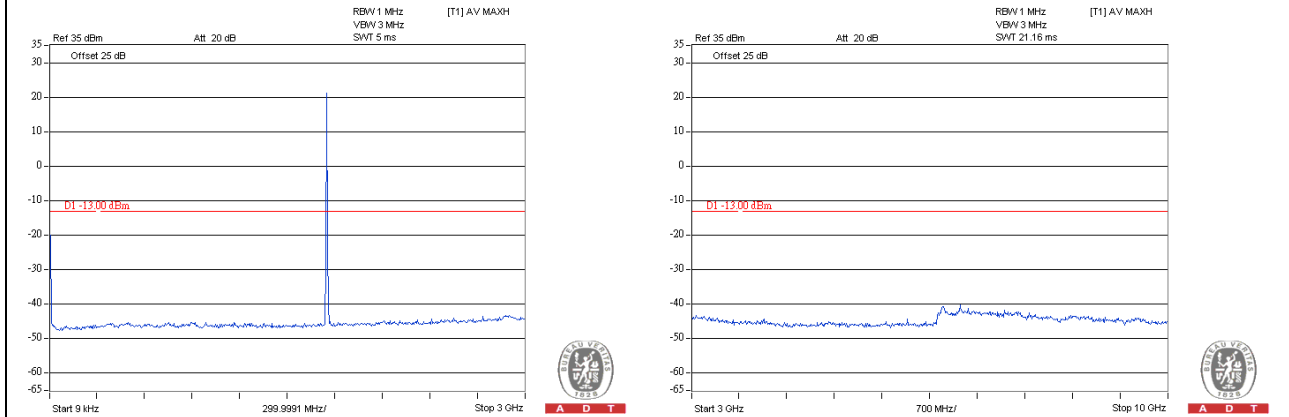


A D T

|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 5MHz     |                              |
| Channel 20175               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 5MHz     |                              |
| Channel 20375               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |

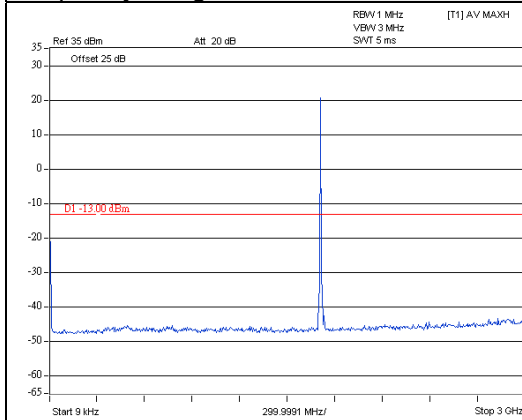


Channel Bandwidth: 10MHz

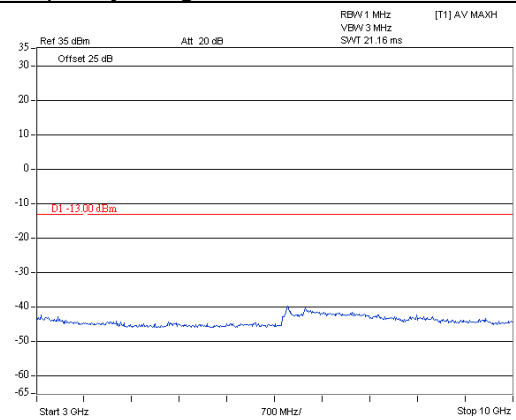
Channel 20000

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

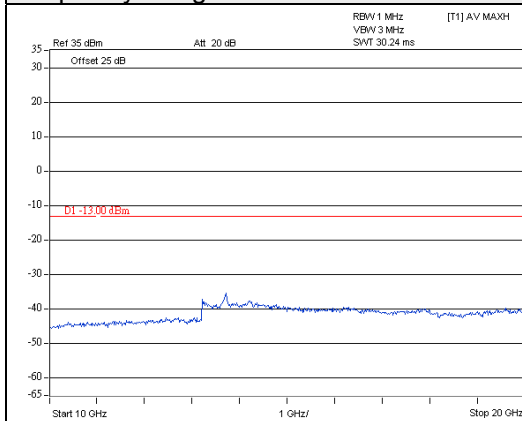


A D T



A D T

Frequency Range : 10GHz~20GHz



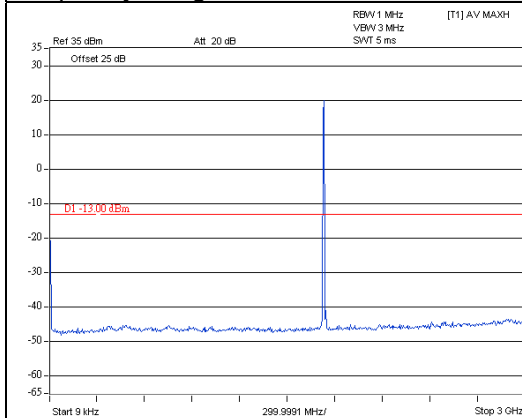
A D T

Channel Bandwidth: 10MHz

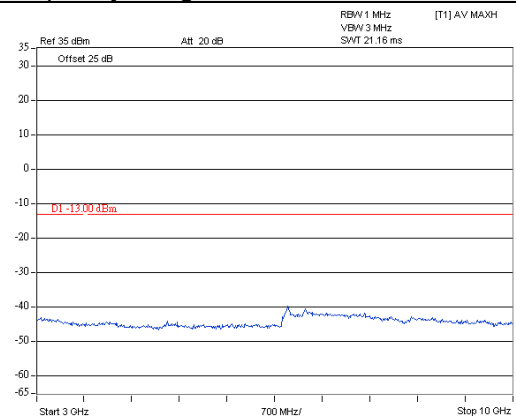
Channel 20175

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

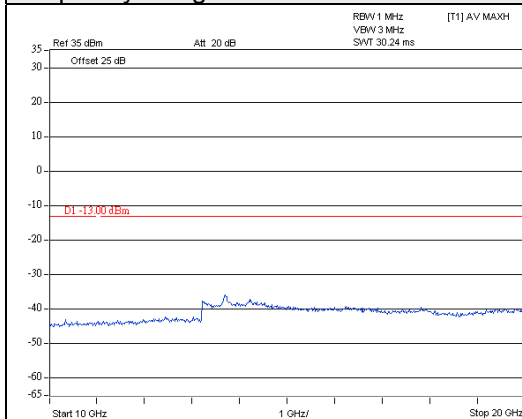


A D T



A D T

Frequency Range : 10GHz~20GHz



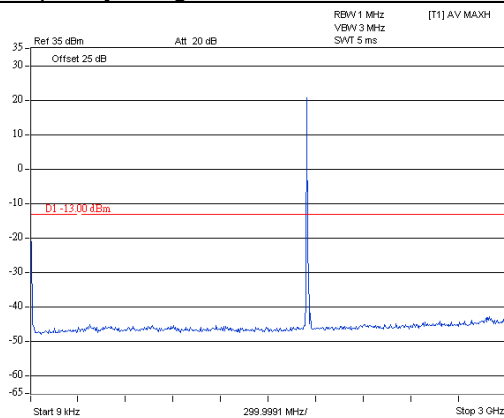
A D T

Channel Bandwidth: 10MHz

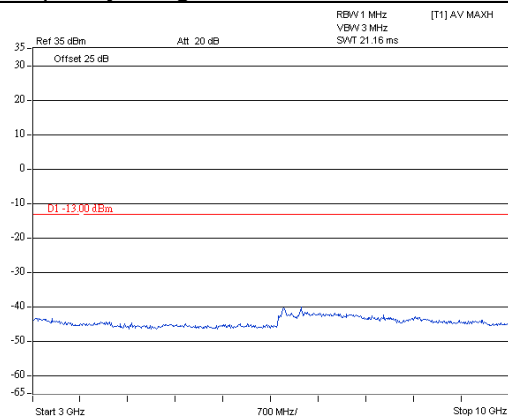
Channel 20350

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

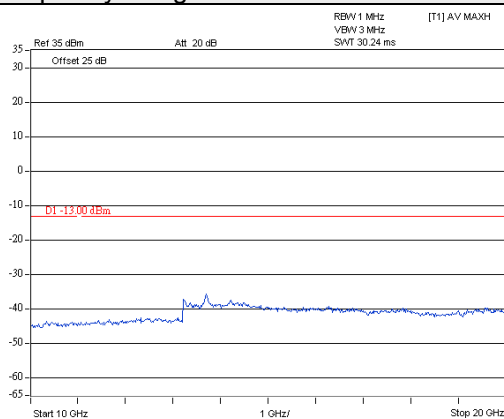


A D T



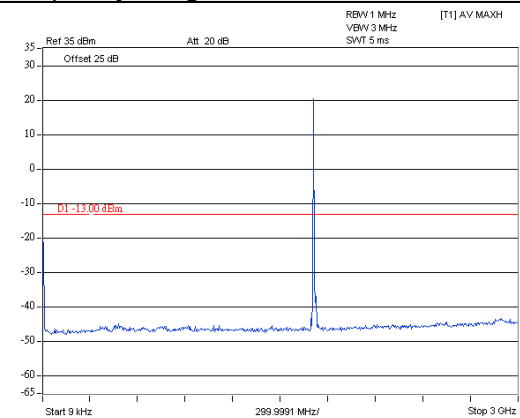
A D T

Frequency Range : 10GHz~20GHz

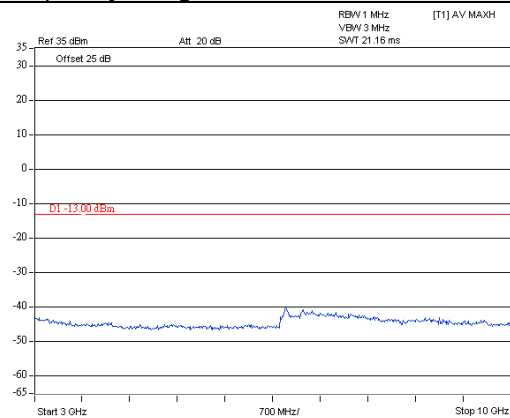


A D T

|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 15MHz    |                              |
| Channel 20025               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |

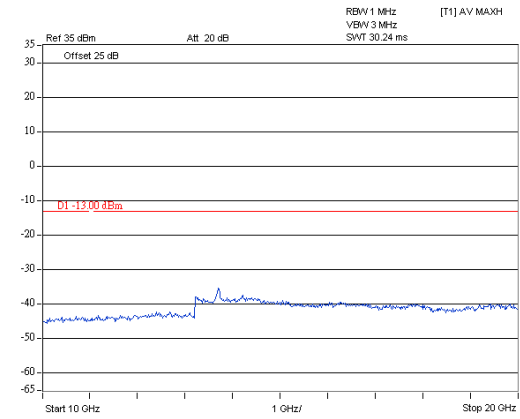


A D T



A D T

|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|



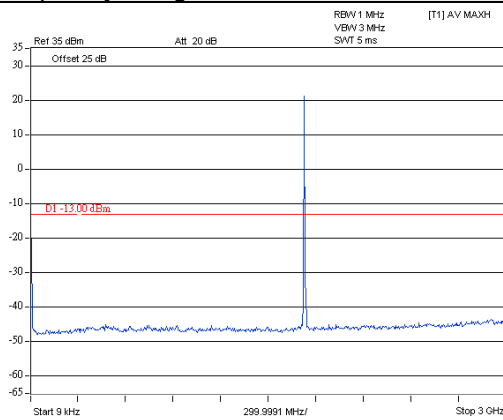
A D T

Channel Bandwidth: 15MHz

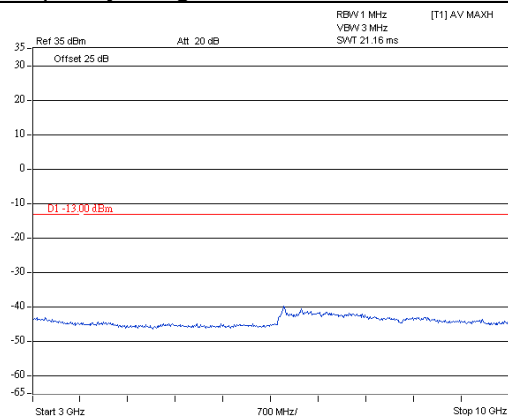
Channel 20175

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

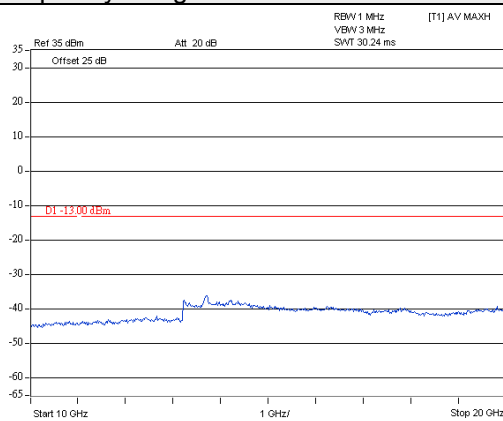


A D T



A D T

Frequency Range : 10GHz~20GHz



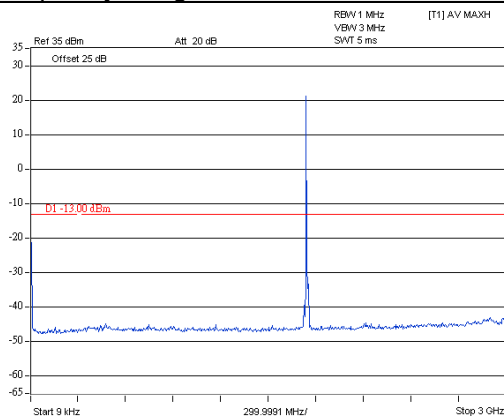
A D T

Channel Bandwidth: 15MHz

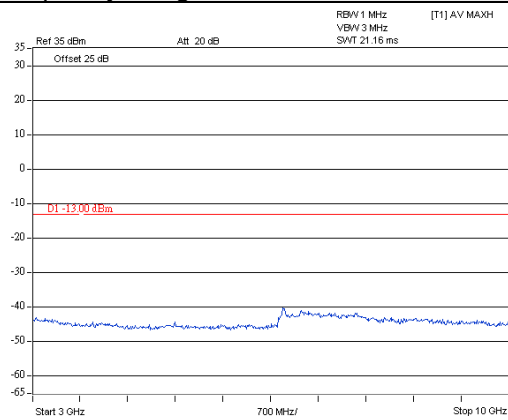
Channel 20325

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

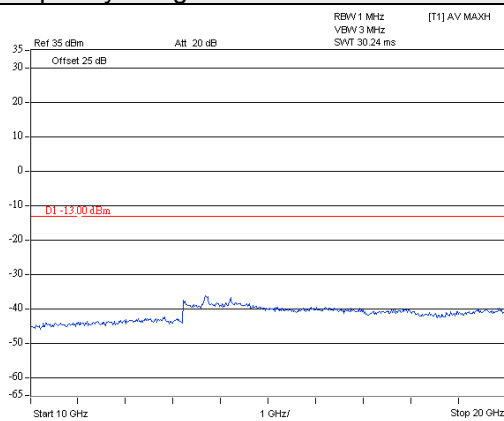


A D T



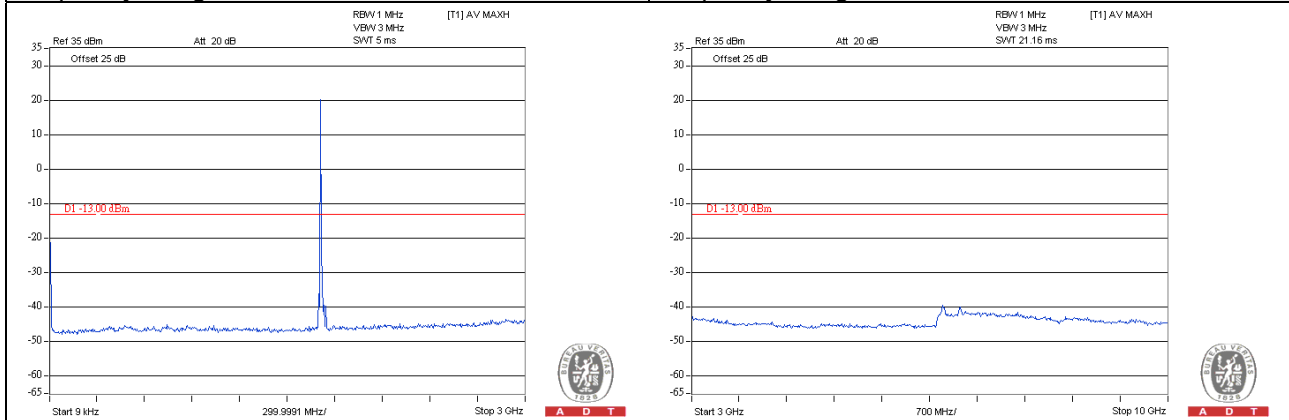
A D T

Frequency Range : 10GHz~20GHz

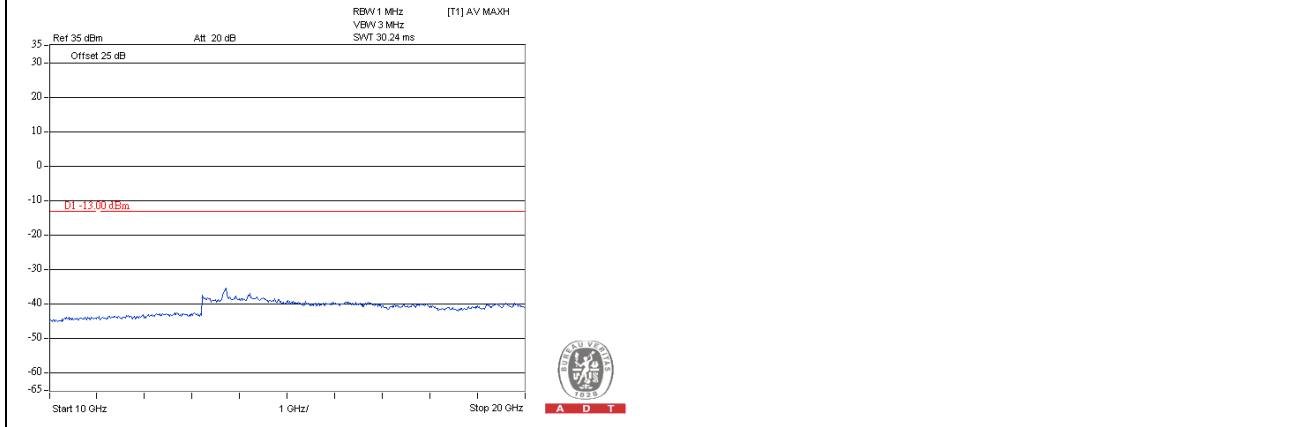


A D T

|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 20MHz    |                              |
| Channel 20050               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|

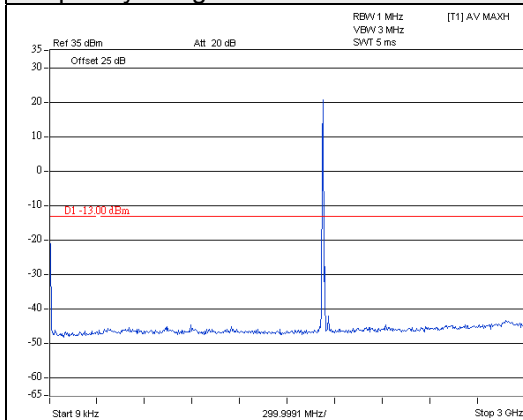


Channel Bandwidth: 20MHz

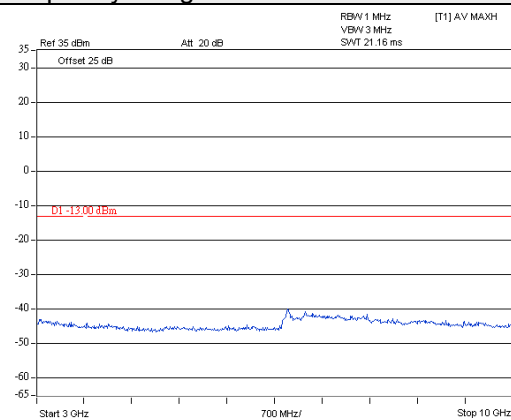
Channel 20175

Frequency Range : 9kHz~3GHz

Frequency Range : 3GHz~10GHz

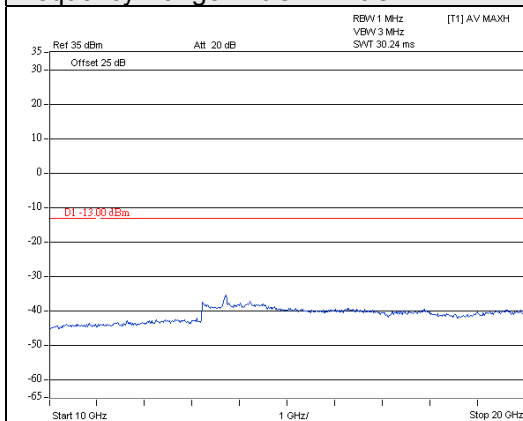


A D T



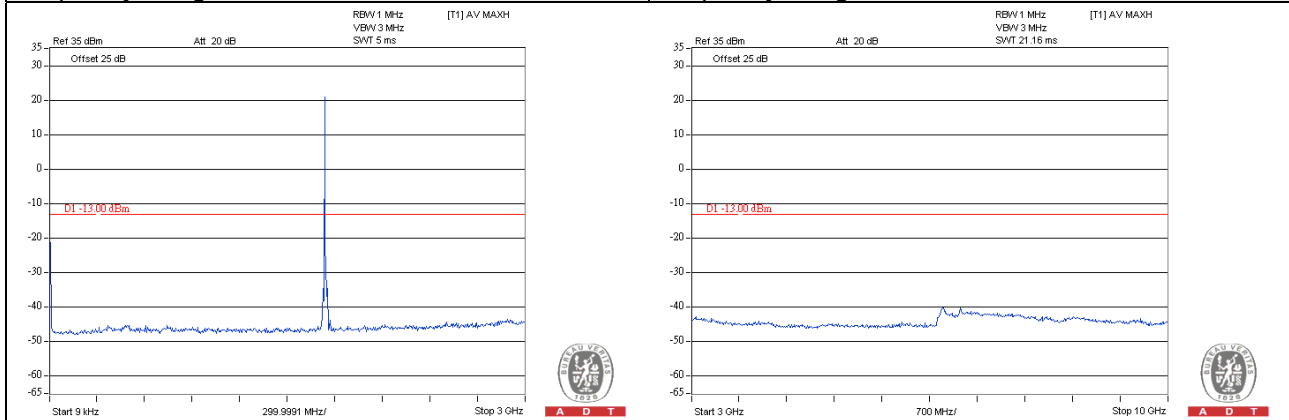
A D T

Frequency Range : 10GHz~20GHz

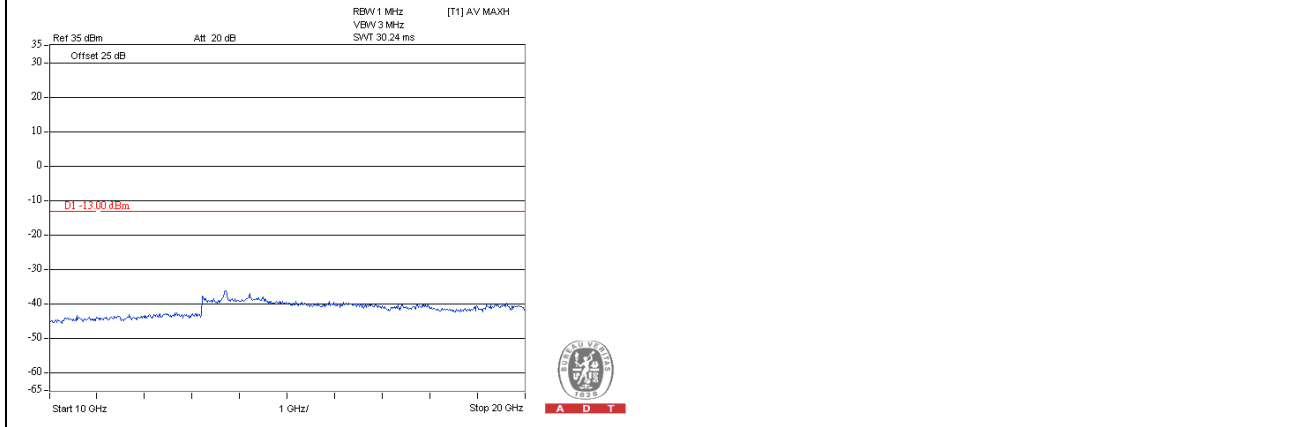


A D T

|                             |                              |
|-----------------------------|------------------------------|
| Channel Bandwidth: 20MHz    |                              |
| Channel 20300               |                              |
| Frequency Range : 9kHz~3GHz | Frequency Range : 3GHz~10GHz |



|                               |  |
|-------------------------------|--|
| Frequency Range : 10GHz~20GHz |  |
|-------------------------------|--|



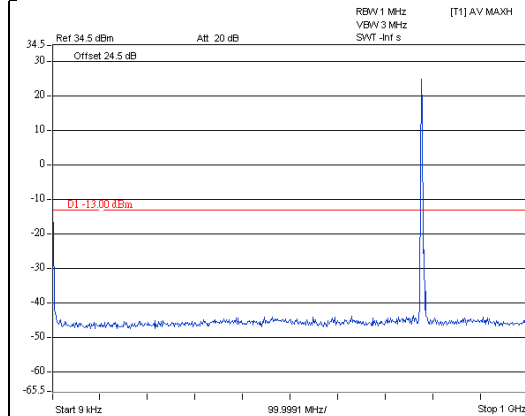
# LTE Band 13

Channel Bandwidth: 5MHz

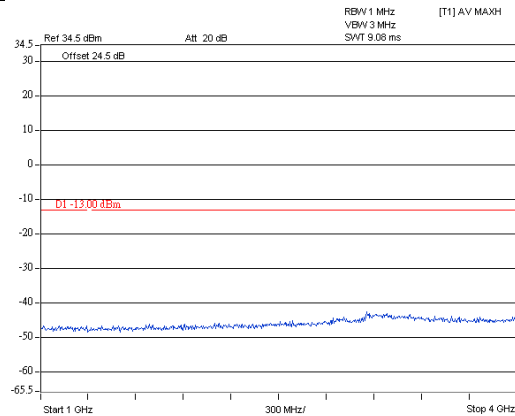
Channel 23205

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



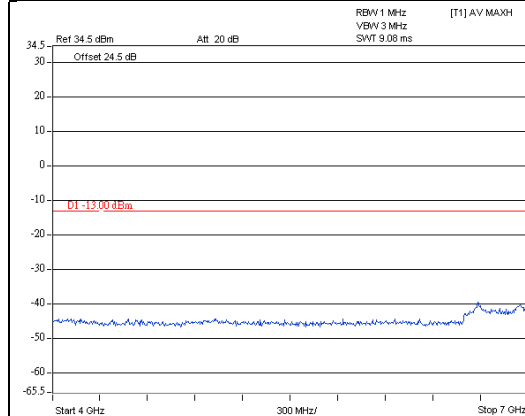
A D T



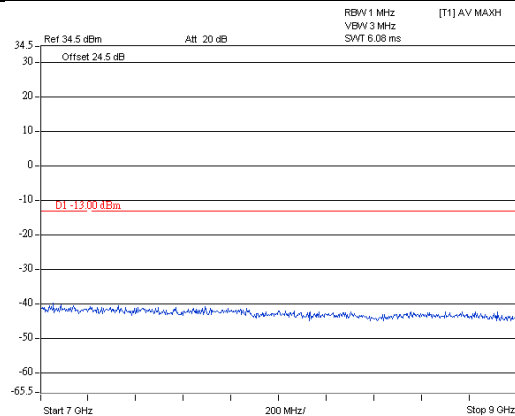
A D T

Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



A D T



A D T



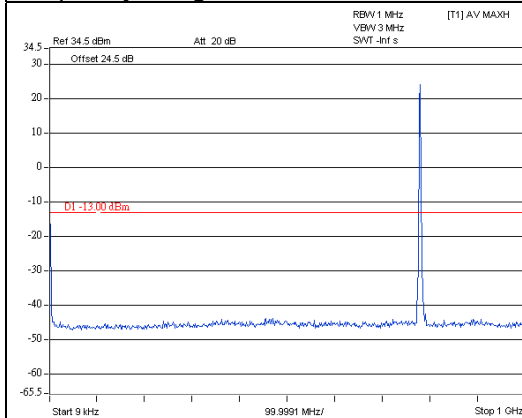
A D T

Channel Bandwidth: 5MHz

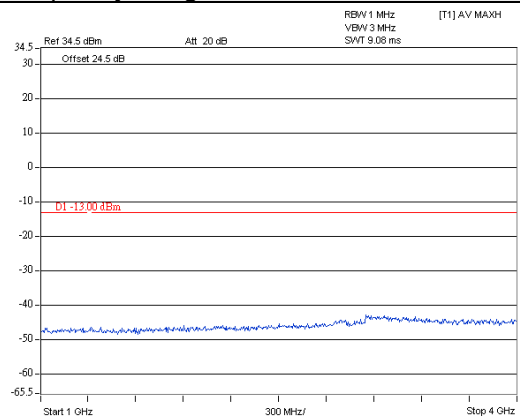
Channel 23230

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



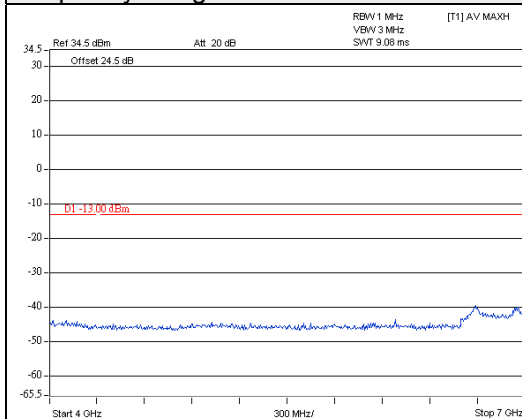
A D T



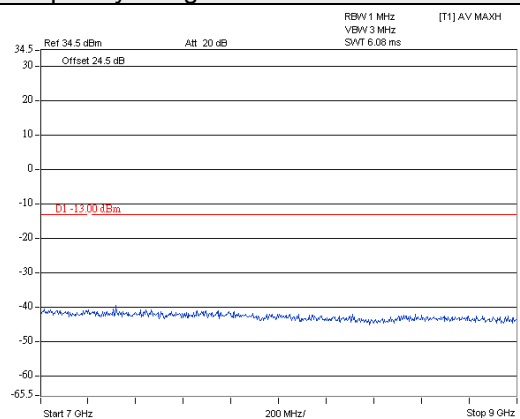
A D T

Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



A D T



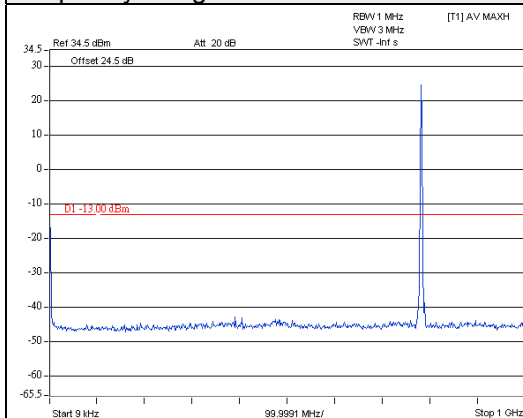
A D T

Channel Bandwidth: 5MHz

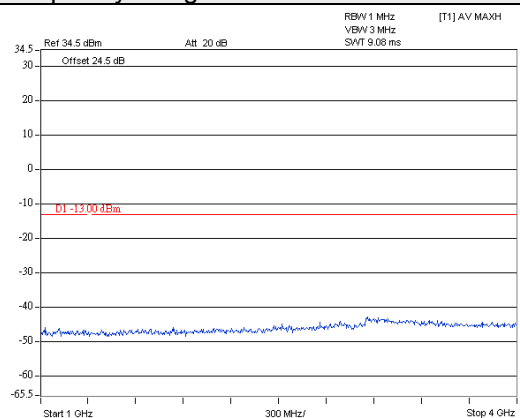
Channel 23255

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



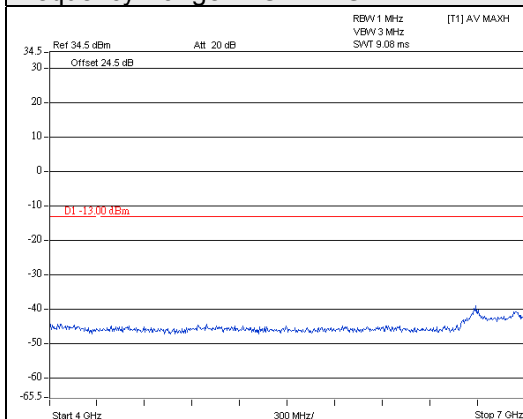
A D T



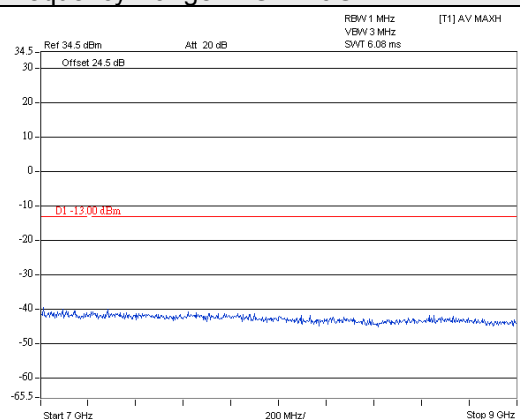
A D T

Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



A D T



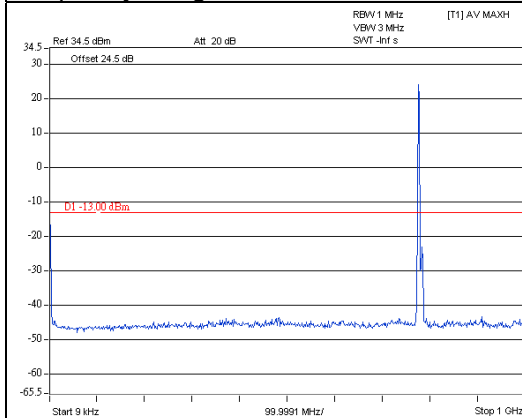
A D T

Channel Bandwidth: 10MHz

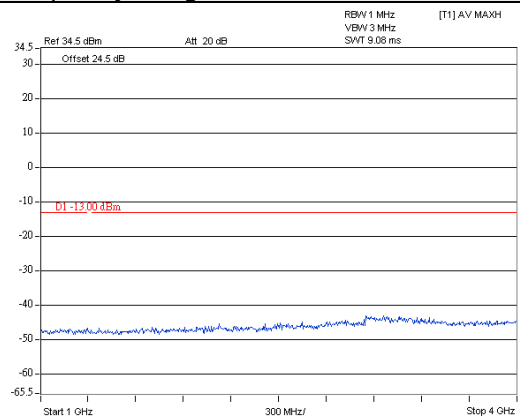
Channel 23230

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



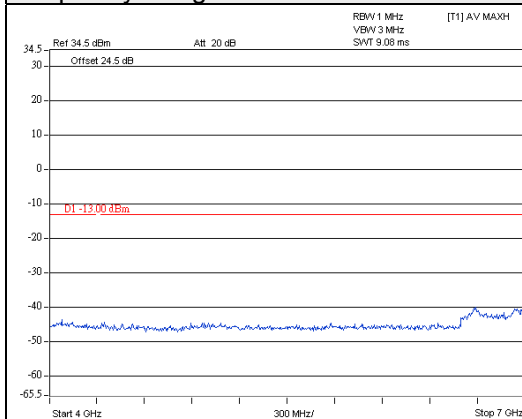
A D T



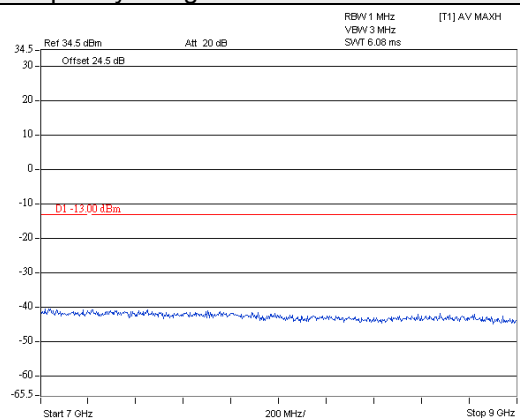
A D T

Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



A D T



A D T

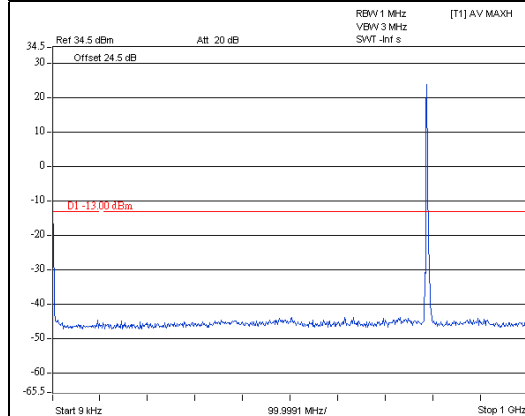
# LTE Band 14

Channel Bandwidth: 5MHz

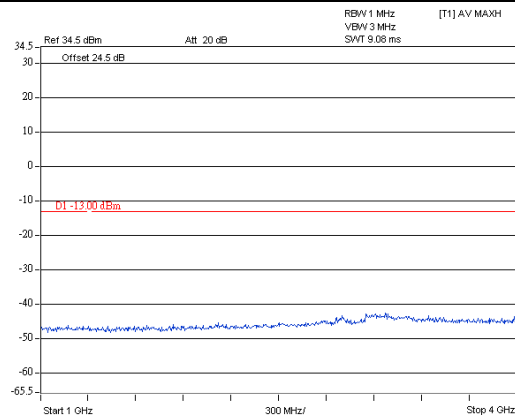
Channel 23305

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



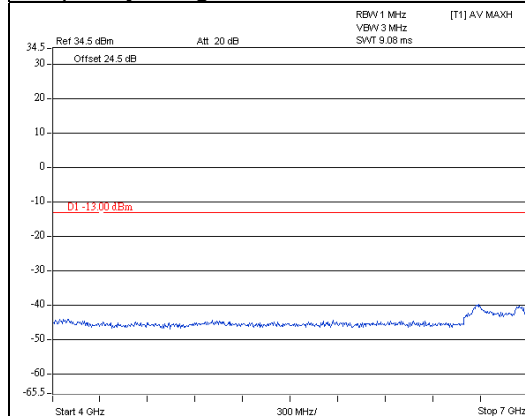
A D T



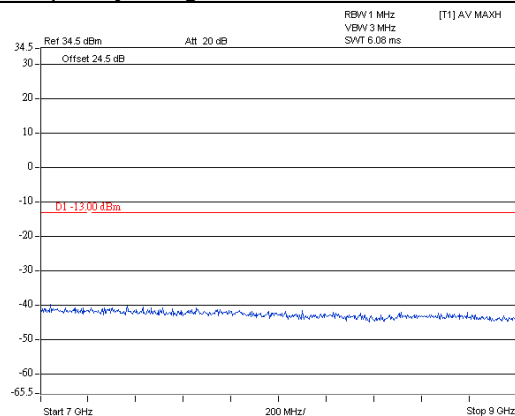
A D T

Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



A D T



A D T

## 4.7 Radiated Emission Measurement

### 4.7.1 Limits of Radiated Emission Measurement

In the FCC 27.53(m) (4), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

### 4.7.2 Test Procedure

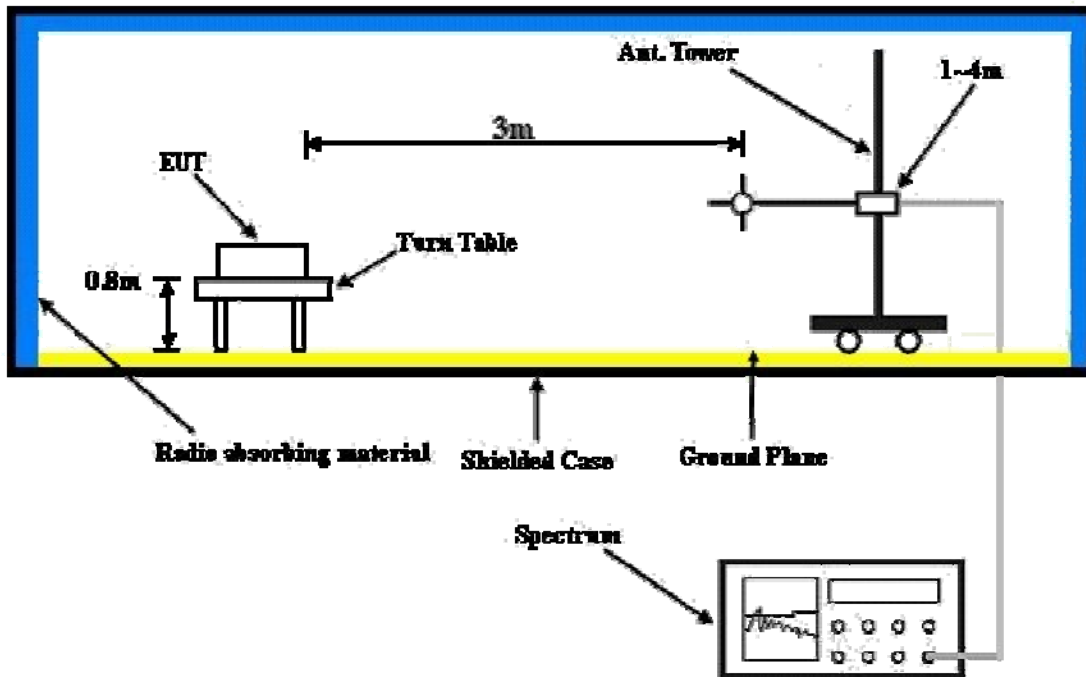
- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution antenna}$ .

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.7.3 Deviation from Test Standard

No deviation.

#### 4.7.4 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.7.5 Test Results

Below 1GHz

LTE Band 4

Channel Bandwidth: 1.4MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 19957 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 80.44       | -47.96        | -52.32                | -1.52                  | -53.84     | -13.00      | -40.84      |
| 2                                                   | 130.88      | -54.39        | -61.36                | -0.13                  | -61.49     | -13.00      | -48.49      |
| 3                                                   | 171.62      | -51.09        | -59.74                | 1.86                   | -57.88     | -13.00      | -44.88      |
| 4                                                   | 307.42      | -56.04        | -65.92                | 5.15                   | -60.77     | -13.00      | -47.77      |
| 5                                                   | 377.26      | -57.17        | -63.86                | 5.24                   | -58.62     | -13.00      | -45.62      |
| 6                                                   | 794.36      | -67.92        | -66.64                | 4.10                   | -62.54     | -13.00      | -49.54      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 43.58       | -36.96        | -32.89                | -10.30                 | -43.19     | -13.00      | -30.19      |
| 2                                                   | 171.62      | -58.71        | -60.20                | 1.86                   | -58.34     | -13.00      | -45.34      |
| 3                                                   | 256.98      | -59.16        | -63.81                | 5.37                   | -58.44     | -13.00      | -45.44      |
| 4                                                   | 613.94      | -67.26        | -66.94                | 4.53                   | -62.41     | -13.00      | -49.41      |
| 5                                                   | 784.66      | -66.40        | -64.39                | 4.23                   | -60.16     | -13.00      | -47.16      |
| 6                                                   | 939.86      | -66.16        | -61.30                | 3.93                   | -57.37     | -13.00      | -44.37      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 3MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 19965 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 51.34       | -51.87        | -43.61                | -9.46                  | -53.07     | -13.00      | -40.07      |
| 2                                                   | 167.74      | -51.87        | -59.80                | 1.37                   | -58.43     | -13.00      | -45.43      |
| 3                                                   | 313.24      | -55.44        | -65.05                | 5.15                   | -59.90     | -13.00      | -46.90      |
| 4                                                   | 377.26      | -57.13        | -63.82                | 5.24                   | -58.58     | -13.00      | -45.58      |
| 5                                                   | 792.42      | -68.49        | -67.17                | 4.12                   | -63.05     | -13.00      | -50.05      |
| 6                                                   | 937.92      | -65.25        | -62.05                | 3.92                   | -58.13     | -13.00      | -45.13      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 39.70       | -44.80        | -41.86                | -10.93                 | -52.79     | -13.00      | -39.79      |
| 2                                                   | 74.62       | -46.03        | -47.06                | -3.45                  | -50.51     | -13.00      | -37.51      |
| 3                                                   | 171.62      | -55.82        | -57.31                | 1.86                   | -55.45     | -13.00      | -42.45      |
| 4                                                   | 264.74      | -60.85        | -63.55                | 5.33                   | -58.22     | -13.00      | -45.22      |
| 5                                                   | 390.84      | -61.45        | -67.72                | 5.24                   | -62.48     | -13.00      | -49.48      |
| 6                                                   | 939.86      | -66.32        | -61.46                | 3.93                   | -57.53     | -13.00      | -44.53      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Channel Bandwidth: 5MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 19975 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 31.94       | -61.14        | -45.59                | -11.93                 | -57.52     | -13.00      | -44.52      |
| 2                                                   | 189.08      | -46.06        | -58.80                | 4.08                   | -54.72     | -13.00      | -41.72      |
| 3                                                   | 307.42      | -57.32        | -67.20                | 5.15                   | -62.05     | -13.00      | -49.05      |
| 4                                                   | 447.10      | -64.35        | -70.45                | 5.10                   | -65.35     | -13.00      | -52.35      |
| 5                                                   | 802.12      | -66.33        | -65.05                | 4.02                   | -61.03     | -13.00      | -48.03      |
| 6                                                   | 937.92      | -67.52        | -64.32                | 3.92                   | -60.40     | -13.00      | -47.40      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 74.62       | -50.65        | -51.68                | -3.45                  | -55.13     | -13.00      | -42.13      |
| 2                                                   | 175.50      | -57.88        | -60.70                | 2.34                   | -58.36     | -13.00      | -45.36      |
| 3                                                   | 260.86      | -61.27        | -64.98                | 5.35                   | -59.63     | -13.00      | -46.63      |
| 4                                                   | 377.26      | -64.43        | -71.00                | 5.24                   | -65.76     | -13.00      | -52.76      |
| 5                                                   | 720.64      | -68.32        | -67.65                | 5.00                   | -62.65     | -13.00      | -49.65      |
| 6                                                   | 792.42      | -66.80        | -64.63                | 4.12                   | -60.51     | -13.00      | -47.51      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Channel Bandwidth: 10MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 20000 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 31.94       | -61.99        | -46.44                | -11.93                 | -58.37     | -13.00      | -45.37      |
| 2                                                   | 187.14      | -49.40        | -61.85                | 3.84                   | -58.01     | -13.00      | -45.01      |
| 3                                                   | 307.42      | -57.03        | -66.91                | 5.15                   | -61.76     | -13.00      | -48.76      |
| 4                                                   | 377.26      | -61.07        | -67.76                | 5.24                   | -62.52     | -13.00      | -49.52      |
| 5                                                   | 798.24      | -67.68        | -66.42                | 4.05                   | -62.37     | -13.00      | -49.37      |
| 6                                                   | 980.60      | -69.51        | -65.65                | 3.93                   | -61.72     | -13.00      | -48.72      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 68.80       | -50.05        | -50.82                | -5.32                  | -56.14     | -13.00      | -43.14      |
| 2                                                   | 165.80      | -56.85        | -58.20                | 1.12                   | -57.08     | -13.00      | -44.08      |
| 3                                                   | 264.74      | -60.78        | -63.48                | 5.33                   | -58.15     | -13.00      | -45.15      |
| 4                                                   | 629.46      | -68.03        | -67.79                | 4.66                   | -63.13     | -13.00      | -50.13      |
| 5                                                   | 792.42      | -66.50        | -64.33                | 4.12                   | -60.21     | -13.00      | -47.21      |
| 6                                                   | 939.86      | -67.42        | -62.56                | 3.93                   | -58.63     | -13.00      | -45.63      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Channel Bandwidth: 15MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 20025 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 37.76       | -60.25        | -45.98                | -11.18                 | -57.16     | -13.00      | -44.16      |
| 2                                                   | 187.14      | -46.65        | -59.10                | 3.84                   | -55.26     | -13.00      | -42.26      |
| 3                                                   | 313.24      | -56.23        | -65.84                | 5.15                   | -60.69     | -13.00      | -47.69      |
| 4                                                   | 377.26      | -57.63        | -64.32                | 5.24                   | -59.08     | -13.00      | -46.08      |
| 5                                                   | 794.36      | -66.53        | -65.25                | 4.10                   | -61.15     | -13.00      | -48.15      |
| 6                                                   | 937.92      | -67.51        | -64.31                | 3.92                   | -60.39     | -13.00      | -47.39      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 68.80       | -50.50        | -51.27                | -5.32                  | -56.59     | -13.00      | -43.59      |
| 2                                                   | 171.62      | -58.20        | -59.69                | 1.86                   | -57.83     | -13.00      | -44.83      |
| 3                                                   | 266.68      | -61.25        | -63.56                | 5.31                   | -58.25     | -13.00      | -45.25      |
| 4                                                   | 617.82      | -67.51        | -67.08                | 4.58                   | -62.50     | -13.00      | -49.50      |
| 5                                                   | 800.18      | -65.94        | -63.62                | 4.02                   | -59.60     | -13.00      | -46.60      |
| 6                                                   | 937.92      | -66.03        | -61.15                | 3.92                   | -57.23     | -13.00      | -44.23      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Channel Bandwidth: 20MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 20050 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 39.70       | -62.08        | -48.86                | -10.93                 | -59.79     | -13.00      | -46.79      |
| 2                                                   | 187.14      | -46.73        | -59.18                | 3.84                   | -55.34     | -13.00      | -42.34      |
| 3                                                   | 307.42      | -55.27        | -65.15                | 5.15                   | -60.00     | -13.00      | -47.00      |
| 4                                                   | 685.72      | -66.71        | -70.21                | 5.12                   | -65.09     | -13.00      | -52.09      |
| 5                                                   | 800.18      | -67.68        | -66.41                | 4.02                   | -62.39     | -13.00      | -49.39      |
| 6                                                   | 903.00      | -60.37        | -57.48                | 3.90                   | -53.58     | -13.00      | -40.58      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 82.38       | -51.40        | -54.44                | -0.98                  | -55.42     | -13.00      | -42.42      |
| 2                                                   | 171.62      | -56.96        | -58.45                | 1.86                   | -56.59     | -13.00      | -43.59      |
| 3                                                   | 262.80      | -61.01        | -64.24                | 5.33                   | -58.91     | -13.00      | -45.91      |
| 4                                                   | 639.16      | -67.28        | -67.66                | 4.76                   | -62.90     | -13.00      | -49.90      |
| 5                                                   | 792.42      | -67.89        | -65.72                | 4.12                   | -61.60     | -13.00      | -48.60      |
| 6                                                   | 904.94      | -68.62        | -65.32                | 3.91                   | -61.41     | -13.00      | -48.41      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 13

Channel Bandwidth: 5MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 23205 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 35.82       | -62.69        | -50.15                | -11.43                 | -61.58    | -13.00      | -48.58      |
| 2                                                   | 189.08      | -45.94        | -60.83                | 4.08                   | -56.75    | -13.00      | -43.75      |
| 3                                                   | 307.42      | -54.92        | -66.95                | 5.15                   | -61.80    | -13.00      | -48.80      |
| 4                                                   | 447.10      | -64.28        | -72.53                | 5.10                   | -67.43    | -13.00      | -54.43      |
| 5                                                   | 769.14      | -67.49        | -69.18                | 4.39                   | -64.79    | -13.00      | -51.79      |
| 6                                                   | 937.92      | -67.54        | -66.49                | 3.92                   | -62.57    | -13.00      | -49.57      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 76.56       | -52.12        | -55.89                | -2.80                  | -58.69    | -13.00      | -45.69      |
| 2                                                   | 175.50      | -58.09        | -63.06                | 2.34                   | -60.72    | -13.00      | -47.72      |
| 3                                                   | 274.44      | -60.35        | -65.07                | 5.26                   | -59.81    | -13.00      | -46.81      |
| 4                                                   | 615.88      | -67.84        | -69.56                | 4.56                   | -65.00    | -13.00      | -52.00      |
| 5                                                   | 753.62      | -67.83        | -68.67                | 4.58                   | -64.09    | -13.00      | -51.09      |
| 6                                                   | 937.92      | -65.97        | -63.24                | 3.92                   | -59.32    | -13.00      | -46.32      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Channel Bandwidth: 10MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 23230 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 41.64       | -60.13        | -48.71                | -10.62                 | -59.33    | -13.00      | -46.33      |
| 2                                                   | 189.08      | -46.72        | -61.61                | 4.08                   | -57.53    | -13.00      | -44.53      |
| 3                                                   | 307.42      | -55.48        | -67.51                | 5.15                   | -62.36    | -13.00      | -49.36      |
| 4                                                   | 377.26      | -61.35        | -70.19                | 5.24                   | -64.95    | -13.00      | -51.95      |
| 5                                                   | 796.30      | -67.65        | -68.51                | 4.07                   | -64.44    | -13.00      | -51.44      |
| 6                                                   | 980.60      | -68.64        | -66.93                | 3.93                   | -63.00    | -13.00      | -50.00      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 41.64       | -47.22        | -45.49                | -10.62                 | -56.11    | -13.00      | -43.11      |
| 2                                                   | 171.62      | -51.50        | -55.14                | 1.86                   | -53.28    | -13.00      | -40.28      |
| 3                                                   | 262.80      | -61.56        | -66.94                | 5.33                   | -61.61    | -13.00      | -48.61      |
| 4                                                   | 385.02      | -59.94        | -68.61                | 5.25                   | -63.36    | -13.00      | -50.36      |
| 5                                                   | 745.86      | -65.66        | -66.86                | 4.68                   | -62.18    | -13.00      | -49.18      |
| 6                                                   | 937.92      | -65.39        | -62.66                | 3.92                   | -58.74    | -13.00      | -45.74      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 14

Channel Bandwidth: 5MHz

|                          |                  |                 |                |
|--------------------------|------------------|-----------------|----------------|
| Mode                     | TX channel 23305 | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz   |
| Tested By                | Chris Lin        |                 |                |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 70.74       | -55.30        | -58.96                | -4.76                  | -63.72    | -13.00      | -50.72      |
| 2                                                   | 189.08      | -46.28        | -61.17                | 4.08                   | -57.09    | -13.00      | -44.09      |
| 3                                                   | 309.36      | -56.64        | -68.59                | 5.15                   | -63.44    | -13.00      | -50.44      |
| 4                                                   | 377.26      | -60.85        | -69.69                | 5.24                   | -64.45    | -13.00      | -51.45      |
| 5                                                   | 800.18      | -67.27        | -68.15                | 4.02                   | -64.13    | -13.00      | -51.13      |
| 6                                                   | 937.92      | -66.02        | -64.97                | 3.92                   | -61.05    | -13.00      | -48.05      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 68.80       | -50.39        | -53.31                | -5.32                  | -58.63    | -13.00      | -45.63      |
| 2                                                   | 138.64      | -52.39        | -58.32                | -0.30                  | -58.62    | -13.00      | -45.62      |
| 3                                                   | 264.74      | -62.55        | -67.40                | 5.33                   | -62.07    | -13.00      | -49.07      |
| 4                                                   | 613.94      | -67.69        | -69.52                | 4.53                   | -64.99    | -13.00      | -51.99      |
| 5                                                   | 802.12      | -67.11        | -66.94                | 4.02                   | -62.92    | -13.00      | -49.92      |
| 6                                                   | 937.92      | -63.99        | -61.26                | 3.92                   | -57.34    | -13.00      | -44.34      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Above 1GHz

Channel Bandwidth: 1.4MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 19957 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3421.40     | -60.32        | -56.13                | 7.07                   | -49.06     | -13.00      | -36.06      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3421.40     | -58.74        | -52.20                | 7.07                   | -45.13     | -13.00      | -32.13      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -60.40        | -55.50                | 7.16                   | -48.34     | -13.00      | -35.34      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -59.87        | -53.11                | 7.16                   | -45.95     | -13.00      | -32.95      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20393 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3508.60     | -60.31        | -54.82                | 7.21                   | -47.61     | -13.00      | -34.61      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3508.60     | -58.79        | -51.86                | 7.21                   | -44.65     | -13.00      | -31.65      |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 3MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 19965 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3423.00     | -60.01        | -55.80                | 7.08                   | -48.72     | -13.00      | -35.72      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3423.00     | -59.87        | -53.33                | 7.08                   | -46.25     | -13.00      | -33.25      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -60.02        | -59.76                | 7.16                   | -52.60     | -13.00      | -39.60      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -59.14        | -52.38                | 7.16                   | -45.22     | -13.00      | -32.22      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20385 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3507.00     | -60.13        | -54.65                | 7.21                   | -47.44     | -13.00      | -34.44      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3507.00     | -58.64        | -51.70                | 7.21                   | -44.49     | -13.00      | -31.49      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 5MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 19975 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3425.00     | -60.03        | -55.78                | 7.08                   | -48.70     | -13.00      | -35.70      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3425.00     | -58.74        | -52.18                | 7.08                   | -45.10     | -13.00      | -32.10      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -60.30        | -55.42                | 7.16                   | -48.26     | -13.00      | -35.26      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -58.76        | -52.00                | 7.16                   | -44.84     | -13.00      | -31.84      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20375 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3505.00     | -60.17        | -54.69                | 7.21                   | -47.48     | -13.00      | -34.48      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3505.00     | -59.78        | -52.84                | 7.21                   | -45.63     | -13.00      | -32.63      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 10MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20000 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3430.00     | -61.30        | -56.97                | 7.09                   | -49.88     | -13.00      | -36.88      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3430.00     | -59.04        | -52.46                | 7.09                   | -45.37     | -13.00      | -32.37      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -62.36        | -57.48                | 7.16                   | -50.32     | -13.00      | -37.32      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -59.78        | -53.02                | 7.16                   | -45.86     | -13.00      | -32.86      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20350 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3500.00     | -61.23        | -55.78                | 7.22                   | -48.56     | -13.00      | -35.56      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3500.00     | -59.41        | -52.46                | 7.22                   | -45.24     | -13.00      | -32.24      |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 15MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20025 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3435.00     | -61.39        | -56.97                | 7.09                   | -49.88     | -13.00      | -36.88      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3435.00     | -59.97        | -53.35                | 7.09                   | -46.26     | -13.00      | -33.26      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -61.03        | -56.15                | 7.16                   | -48.99     | -13.00      | -35.99      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -59.78        | -53.02                | 7.16                   | -45.86     | -13.00      | -32.86      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20325 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3495.00     | -61.22        | -55.85                | 7.21                   | -48.64     | -13.00      | -35.64      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3495.00     | -59.47        | -52.55                | 7.21                   | -45.34     | -13.00      | -32.34      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Channel Bandwidth: 20MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20050 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3440.00     | -62.07        | -57.58                | 7.11                   | -50.47     | -13.00      | -37.47      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3440.00     | -60.36        | -53.73                | 7.11                   | -46.62     | -13.00      | -33.62      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20175 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -62.30        | -57.42                | 7.16                   | -50.26     | -13.00      | -37.26      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3465.00     | -60.14        | -53.39                | 7.14                   | -46.25     | -13.00      | -33.25      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 20300 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -62.36        | -57.07                | 7.20                   | -49.87     | -13.00      | -36.87      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 3490.00     | -60.01        | -53.11                | 7.20                   | -45.91     | -13.00      | -32.91      |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 13

Channel Bandwidth: 5MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 23205 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1559.00     | -57.55        | -60.63                | 5.27                   | -55.36    | -13.00      | -42.36      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1559.00     | -59.15        | -60.99                | 5.27                   | -55.72    | -13.00      | -42.72      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 23230 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1564.00     | -56.41        | -59.56                | 5.28                   | -54.28    | -13.00      | -41.28      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1564.00     | -58.97        | -60.79                | 5.28                   | -55.51    | -13.00      | -42.51      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 23255 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1569.00     | -56.74        | -59.96                | 5.29                   | -54.67    | -13.00      | -41.67      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1569.00     | -59.64        | -61.45                | 5.29                   | -56.16    | -13.00      | -43.16      |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Channel Bandwidth: 10MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 23230 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1564.00     | -56.31        | -59.46                | 5.28                   | -54.18    | -13.00      | -41.18      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1564.00     | -58.64        | -60.46                | 5.28                   | -55.18    | -13.00      | -42.18      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



LTE Band 14

Channel Bandwidth: 5MHz

|                          |                  |                 |               |
|--------------------------|------------------|-----------------|---------------|
| Mode                     | TX channel 23305 | Frequency Range | Above 1000MHz |
| Environmental Conditions | 24deg. C, 63%RH  | Input Power     | 120Vac, 60Hz  |
| Tested By                | Chris Lin        |                 |               |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1559.00     | -57.41        | -60.49                | 5.27                   | -55.22    | -13.00      | -42.22      |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |           |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1559.00     | -57.69        | -59.53                | 5.27                   | -54.26    | -13.00      | -41.26      |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab/Telecom Lab**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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